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THE GEOGRAPHIC VIEWPOINT IN MEDICAL CARE STUDIES

by

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SUMMARY

The first part of this thesis is a review of the literature dealing with distance as a factor in the use and organisation of health services. The concept of distance is discussed first as a background to the medical care literature review which is itself presented in three sections. These are first, area studies of the distribution of medical care facilities; second, empiric studies of the relationship between distance and the use of services; third, the distance factor in health service organisation.

The second part of the thesis describes the aims, methods and results of a survey of family daily visiting to paediatric in-patients in a regional hospital in South East Scotland. The focus of the study is on the relationship between distance and the amount of family visiting. Records of visiting to 502 in-patients were collected at the hospital and social and geographic data relating to each family was acquired by means of a postal questionnaire.

The results show that the amount of daily visiting is much greater from families living within 15 miles of the hospital than from families living beyond this distance. The relationship between distance and visiting however is not a simple one. The findings show that many social and geographic factors inter-relate with family size, time of the week, car ownership, time and cost of travel as well as others all contributing to the lowered

visiting from families living beyond 15 miles.

The implications of the Edinburgh Survey are then discussed in two respects; First, in relation to geographic spatial theory; second, relating to practical situations in medical care and especially in relation to official thinking about hospital planning in Britain. If the creation of access problems for visitors and possibly other groups such as out-patients, is to be avoided under the envisaged pattern of more centralised hospital facilities in Britain it is concluded that there is an urgent need to take more account of socio-geographic realities than has hitherto been the case in hospital planning.

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PART I

REVIEW OF THE LITERATURE

CHAPTER 1

INTRODUCTION

The geographer and medical research

This is a study in applied geography. It deals with the use of the geographic or spatial viewpoint in medical studies with particular reference to the field of medical care. The decision to work in this area of medicine, as opposed to that dealing with disease distribution, represents something of a departure from the work of most other geographers who have studied problems of medical significance in recent years. Most of these authors have either re-emphasised the value of mapping mortality and morbidity data in the search for causative factors (Stamp, 1964; Howe, 1963, 1970; Murray, 1962; McGlashan, 1967; Learmonth, 1957) or have stressed the importance of considering geographic factors in programmes of infectious disease control (Prothero, 1965).

This recent focus on disease problems by geographers is in part an acknowledgement to the past success achieved by medically qualified scientists, especially epidemiologists, in their own application of the geographic approach in these two fields. This is not the place to embark on a systematic historical review of epidemiologists' findings; suffice it to say that since the beginning of this century they have made notable contributions to our understanding of disease aetiology and control through the study of the geographic distribution of disease and the use of maps as descriptive and analytic tools (Porritt, 1934; Sleeping

Sickness Commissions 1902-3; Indian Plague Commissions 1906-10; Ross, et al., (1900); Verteuil and Urich, 1935; Bloss, 1945; Morris, 1949; Pampana, 1963).

It is noticeable that the geographic approach has been of greatest value in the past in relation to the aetiology and control of communicable diseases. Such diseases were frequently the result of infection by a single causative agent, onset was often rapid following contact with the agent and the vehicle of transmission was often a major factor of man's natural environment, such as water supply or an insect vector. In these circumstances location could be of considerable aetiological significance and the study of geographic patterns of disease was an appropriate descriptive and analytic procedure. The intensive work which has recently resulted from the portrayal of the geographic patterns of Burkitt's Lymphoma in Africa suggests that these methods may well remain of considerable value in the tropics.

For a number of reasons, however, it appears doubtful to the present author whether the same approach will enable substantial contributions to be made to understanding the causes of the major chronic and degenerative diseases which are now the principal causes of death in a society like our own. Enough is already known in broad outline about conditions such as malignant neoplasms, diseases of the circulatory and nervous systems, bronchitis and accidents to suggest that real progress towards understanding their causation which is achieved on the basis of studying geographic distribution patterns may be very much the exception rather than

the rule. Diseases such as these appear to originate more in the behaviour of individuals than in the influence of broad factors present in the external physical or man made environment. Again, evidence so far suggests that our modern diseases have a number of interdependent causes, and their onset may occur over extremely long periods of time. In addition we live in a society that is marked by increasing geographic and social mobility. For all of these reasons it appears questionable whether the study of geographic patterns of chronic and degenerative diseases can lead to major aetiologic contributions as has been suggested might be the case. To be sure, it is not difficult to establish spatial correlations between disease distributions and social or physical factors in the environment as Percy Stocks showed over thirty years ago in his studies of the regional distribution of cancers in Britain.¹ The fact remains however that the study of spatial distributions has contributed little to our understanding of the aetiology or control of degenerative diseases to date.

However, it is not only the nature of our modern diseases which makes the geographer's task difficult if he wishes to pursue problems of aetiology in advanced societies. There is, too, the fact that he is duplicating the work of the epidemiologist who, as a routine procedure relates disease incidence to location during the descriptive phase of his investigations. It has to be appreciated too that this step is only one part of a rigorous epidemiological strategy which involves the study of disease occurrence in relation to a host of other variables. In short,

1. Stocks, P. (1936, 1937, 1939). British Empire Cancer Campaign, Annual Reports.

whilst the geographer offers an undoubted expertise in his ability to describe and analyse spatial patterns, the epidemiologist is also traditionally competent in this respect, he uses this approach as only one part of a wider attack on problems of disease aetiology and he brings to bear a clinical insight which can be rarely acquired by the geographer.

The purpose of this introductory argument is not to suggest that the geographer is unable to make a useful contribution to solving the principal diseases confronting our society. In the final event it will only be when the aetiology of the chronic diseases is fully understood that it will be possible to assess the contributions that will have come from studies of the geographic patterns of disease. It is however the intention to stress that the skills which the geographer can most appropriately bring to bear in this field are limited, both in their scope and conceivably also in their suitability.

On the basis of a year's study of the use of the geographic approach to disease problems by epidemiologists the present author has concluded that a geographer wishing to work in medicine in societies like our own, can best deploy his particular skills of spatial analysis with hope of reward in the field of medical care research.

Medical care is that branch of community or social medicine which seeks to understand the functioning of all aspects of health services. It is an applied field with the aim of providing information which will help to ensure the provision of effective

and efficient medical services to those in need. Research in this field has increased substantially since the passing of the National Health Service Act 1946, and the value of considering geographic factors such as population distribution, distance and facility locations when seeking to understand patterns of community use of medical services has already been shown by various authors (see Chapter 3). However, from the geographic viewpoint, the field of medical care research remains in its infancy. The scope for further application of the spatial viewpoint in describing and analysing the locational relationships between centres of care (hospitals, health centres, practice surgeries, clinics etc.) and the communities they serve is immense. Elsewhere, the work by Godlund (1959) in Sweden and Morrill (1963) in Chicago, which was commissioned by medical authorities, is evidence too, that medicine recognises and welcomes the contribution that geographers can make in this field.

Outline of thesis

At the time that the present work was undertaken (1967) no reviews of geographically oriented studies in medical care existed. As an initial step it was decided to make such a review and this occupies the first half of the thesis. The focus of the review and the theme of the whole work is the way in which distance, as a fundamental geographic concept, is important in relation to the use and organisation of medical care services.

Chapter two presents a brief discussion of the concept of

distance. This provides a background to the fairly extensive treatment of the distance factor in the medical care literature in Chapter 3. Some of the conclusions which emerge from this review form the starting point for the empiric investigation which is the subject of the second part of this work where the focus is upon the relationship between distance and the amount of family visiting which is undertaken to hospitalised children. The origins and aims of the study are dealt with in Chapter 4, the methods used in the enquiry in Chapter 5 and the results are presented in Chapter 6. Chapter 7 is concerned with the implications of the study findings for geographic spatial theory. Chapter 8 discusses the implications arising both for the parental support of children in the hospital chosen for study and for family access to inpatients in other specialties where visiting support is considered to be important. Conclusions from the thesis as a whole are given in Chapter 9.

The conclusions which emerge from the work emphasise the value of inter-disciplinary study and underline the positive contribution that the geographer can make in the field of medical care research.

CHAPTER 2

THE CONCEPT OF DISTANCE

"In economic, social or psychologic terms, 10 miles is not simply equivalent to 10 times 1 mile, and 10 miles over flat plain is rather different from 10 miles across the Alps."

D.W. Harvey.

The concept of distance is briefly discussed in this chapter. This is to serve as a background to the subsequent study of the distance variable in the medical care literature.

Distance is a fundamental variable, not only of disciplines dealing with spatial aspects of human activities but of all subjects concerned with the study of terrestrial phenomena which by their existence on the earth's surface have characteristics of location and spatial organisation. Along with the dimension of direction, measurements of distance provide a means of fixing the positions of objects (e.g. plants, towns, ships) on the earth's surface both absolutely and also in relation to other points. However this chapter will not be concerned with distance outside of the human sciences nor primarily with its theoretical aspects. Rather, the emphasis will be on the treatment of distance, first as a descriptive and secondly as an explanatory variable in relation to human activities.

To illustrate these themes references will be drawn principally from the field of human geography which is today increasingly involved with the analysis of spatial patterns in which the distance

variable is a central element. For present purposes distance will be treated under the following three headings:

- 1) Basic or geographic distance.
- 2) Objective transformations of distance.
- 3) Perceived or subjective distance.

1. Basic or geographic distance

The importance of basic distance as a descriptive variable may be illustrated by referring to two central and related areas of human geographic enquiry; studies of movement in space (e.g. journeys to work, migration) and the tendency towards a regularity in the spatial ordering of settlement on the earth's surface.

In the initial stage of a geographic enquiry it is usual to describe the particular spatial pattern which is the focus of interest, and in this process measures of basic linear distance are invariably used (e.g. miles, kms.,). For example, one might wish to compare the volume of daily commuter journeys over short as opposed to long distances. The use of linear measures of geographic distance at this stage of an enquiry is appropriate for a number of reasons. It is easy to collect, it has the merit of being objective and it can often be readily converted in the later stages of study into appropriate explanatory terms (e.g. travel time) should the need arise.

Over the years, various measures of basic distance have been applied in descriptive studies. At the crudest level, Ravenstein (1885) in his migration studies used the rough proximity of

administrative units to give an estimate of distance, a technique which is still frequently used today in view of the common procedure of publishing official statistics by administrative units. Other basic measures include straight-line distance between two points, actual or estimated mileages by road, rail, air or sea and, based on any of these types of measurements, arbitrarily defined distance zones (e.g. $0 < 5$ miles, $5 < 10$ miles). Depending on the circumstances involved, each of these different measures may remain an appropriate index today. However Harvey (1967) has pointed out that the use of linear distance measures demands some caution particularly as their significance may vary from place to place and with time in any one place.

The empiric findings which have emerged from descriptive enquiries in geography have revealed the existence of ordered patterns of human activity in relation to distance. For example a frequent observation has been that as distance increases the volume of human movement (e.g. migration) and of activity related to human existence (e.g. movement of commercial freight) tends to decline implying that distance acts as a frictional force. Reviews of empiric findings in this connection have been given by Zipf (1949), Isard (1956) and briefly by Haggett (1965). The last author concludes that from the evidence available the observed inverse relationship between movement and basic distance appears to be a universal phenomenon.

The other field in which distance regularities have been observed is that dealing with the size and spacing of human

settlements. The proposition that small settlements are closely spaced and large settlements more widely spaced has produced a great deal of empiric and theoretic literature aimed at understanding spatial regularities in settlement pattern since Walter Christaller's original work in South Germany (1933). Today, a large part of human geography is devoted to the study of central places and functional hierarchies. Haggett (1965) and Berry and Horton (1970) provide two of the most recent reviews of work in this field.

Basic or geographic distance therefore is an objective index widely used in the descriptive stages of geographic enquiry. Whilst it is helpful in revealing spatial patterns however, it does not take us far in understanding the reasons behind them. Instead, transformations of the distance variable have to be sought which can be applied as explanatory variables in particular situations.

2. Transformations of objective distance

In geographic studies the described associations between distance and human movement or spatial arrangement of settlements leads logically to the search for explanation and it is here that social, economic and other transformations of distance become useful. Watson (1955) says:-

"As geographers explore the avenues of what man has done they see him introduce factors of distance, or even types of distance, that have less and less to do with physical causes, and more and more to do with economic and social ones..... For instance, in studying roads and railways, they have to qualify 'Geographical' distances by 'cost' distances."

Among the measures of distance that have been used to help explain patterns of movement in space are those of travel time (Voorhees, 1955), transport costs (Harris, 1954), and road distances weighted by road surface types (Garrison, 1956). Measures such as these are objective transformations which are based on direct measures of distance, but this kind of direct conversion may not always be appropriate. Thus, Stouffer (1940, 1962), in a theoretical study of human movement suggested that the number of opportunities lying between two points (intervening opportunities) might be used as a measure of the distance separating them. This model avoids the use of actual measures of distance and has been found useful in various situations such as studies of the journey to work.

Economic and social transformations of distance have also been widely applied in attempts to understand the distribution pattern of human settlements and within settlements the pattern of human activities. Thus, time and cost notions of distance are basic to the theme of spatial competition for service which, in turn, is fundamental to the ideas of central theory and complementary regions.

Between them, human ecologists and human geographers have described and attempted to explain the spatial distribution of functions in urban areas in relation to distance. Bogue (1950), in his comprehensive enquiry into the theme of metropolitan dominance in the U.S.A., found clear inverse relationships between increasing distance from metropolitan centres and patterns of urban

population density, levels of manufacturing and rural population density. Among the distance transformations that subsequently have been used to help explain the distribution of functions in urban areas, have been density distance, (Olssen/Persson, 1964), income distance (Getis, 1963), and land value distance (Garner, 1966).

Some indication of the variety of distance measures that have been used in geography has now been given and it will be apparent that the concept of distance is both complex and of wide relevance. So far however, it has been considered only in its objective aspects reflecting the fact that until recently, geography as a subject was largely concerned with spatial patterns and activities in the objective environment. In the last two decades however, interest in the subjectively perceived, as opposed to the objectively existing, environment, has been a major development and this idea appears to have considerable implications for understanding the way in which individuals respond to distance.

3. Subjective distance

Wood (1970), in a comprehensive review, traces the origin of geographic perception studies from the clinical work of psychologists and comments on the wide range of enquiries which have been undertaken by geographers in this field. He suggests that

"The explanations and understanding of the vast range of material which human geographers study from continental patterns of migration to the behaviour of farmers in areas of climatic hazard, can be greatly increased by consideration of the individual's perception of his environment."

This idea of the subjectively perceived geographic environment and man's response to it has been succinctly summed up by Ambrose (1969). The external environment in which the individual lives is partly man made and partly natural and, at any time and place, the individual is in a position to experience the objective characteristics of it (e.g. amount of rainfall, level of traffic noise) and act accordingly. But man's actions depend not on what actually exists but on what he perceives to exist. This perception is conditioned by beliefs and experience and in turn these are fashioned by a diversity of factors peculiar to the individual such as cultural background, age and education. Ambrose states:

"Our belief and perceptions about what the environment offers us is a more powerful explanation of what we do than is the environment as it exists in terms of cold objective fact."

Wood, in his review, sums up the geographers' contributions on this theme as follows:

"Geographers seem to be mainly concerned with the individual's perception of his environment, how the individual's culture and experience affect this perception, how the individual's perception affects his behaviour and with the effects which differing perceptions can have on the appearance of the landscape."

Among the subjects that have been enquired into under the heading of the perceived environment is the concept of subjectively perceived distance and the study of this idea appears to offer a fruitful line of enquiry. One of the earliest of these studies was that by Thompson (1963) into retail shopping patterns in San Francisco, aimed at evaluating a commonly assumed

point i.e. whether distance did have any effect on consumers' decisions where to shop. Specifically, Thompson wished to know whether consumers could "evaluate distance and driving time in any consistent fashion" and "whether or not evaluation of time and distance is affected by the character of the destination." He found that there was "a general tendency on the part of the sample consumers to overestimate both the driving time and distance travelled in the satisfaction of their retail needs." Further, by comparing their estimates of distance and time to discount houses as against a department store, Thompson concluded that

"the sample consumers regarded the discount houses as being further away from their residences in time and distance than the department store."

His interpretation of this finding was as follows:

"This study suggests the further refinement that two retail outlets offering approximately the same merchandise lines - department stores and discount houses - may take on different geographic dimensions in the mind of the consumer. As a rule, the discount houses in the sample offered less consumer convenience and fewer services, and usually were more crowded and less desirable places to shop, than were the competing department stores. Apparently the impression made upon the consumer by the fewer conveniences offered in the discount house was further extended by him to influence his evaluation of physical distance between his own home and the store. This subjective colouring of an objective fact is thus termed, 'the concept of subjective distance'."

Ambrose in his own summary of this concept of subjective distance concludes:

"....it is sometimes misleading to try to interpret people's spatial behaviour in terms of objectively measured distances, whether they be in terms of miles or minutes. The nature of the destination colours the distance estimation and people act in an environment made up of subjectively located

destinations. In other words we all carry around a rough map of places and distances in our head and we often act according to this map rather than to more objectively drawn maps."

This theme of subjectively perceived distance has been developed far enough to illustrate that even the objective transformations of distance discussed earlier may be insufficiently precise to provide detailed insight into the reasons for individuals' patterns of behaviour in geographic space. The concept of subjective distance appears to be a potentially rewarding one in the continuing search for understanding in this area.

Summary

This chapter has dealt briefly with the concept of distance as a descriptive and explanatory variable in human geography. Usually measures of basic or geographic distance (miles, kms.) are employed in the initial stages of a geographic enquiry. Subsequently, in attempting to explain observed patterns appropriate transformations of distance have to be sought and a great variety of such measures have been used (e.g. intervening opportunities, travel time, travel cost). Recently interest has developed in the subject of the perceived environment and from work in this field has emerged the concept of subjective distance. In many situations this idea may help to explain the patterns of movement of individuals in geographic space.

CHAPTER 3

THE DISTANCE FACTOR IN THE USE AND ORGANISATION OF MEDICAL CARE SERVICES

The aim of this chapter is to review the literature which has implicated distance as an element in the utilisation and the organisation of medical care services.

Evang (1960) has remarked that the declared policy of all nations

"is of course to make up-to-date health services available to the greatest possible number of people regardless of economic and social status, creed or colour; and to reach this goal without unreasonable cost and in a way which on the one hand meets the health needs of the people, and on the other hand creates satisfactory working conditions for the medical profession and other medical personnel."

To help achieve this end much medical care research has been devoted to describing variations in the utilization of available services, to trying to explain the reasons for these variations and to applying this knowledge to the organisation of medical services. In all of these areas our current knowledge remains incomplete, but in the last two decades rapid progress has been made especially in understanding the factors which contribute to differential use of available facilities. It is important that knowledge continues to be extended in these areas if medical service provision is to be improved in the future.

To date various authors (Feldstein, 1966; Rosenthal, 1965; Logan, 1964; Williams et al., 1960) have shown that a host of cultural, socio-economic, demographic, medical, psychologic and

geographic factors interrelate to account for differences in the demand for medical care. It is on the importance of distance as a major geographic factor affecting the utilization and organisation of medical services that the present review concentrates.

Shannon, Bashhur and Metzner, (1968) reviewed the American literature in this field up to the mid-1960's and recognised the following three types of study which have developed and currently co-exist.

- 1) Those which use an areal approach to describe inequalities between the geographic distribution of health care facilities and population.
- 2) Empiric studies which focus on the relationship between utilization of services and distance.
- 3) Theoretic studies.

The present review covers the North American and British literature but also includes some of the main studies in this field from elsewhere. The first two types of study recognised by Shannon et al. are dealt with here but theoretical work is not discussed as it is not considered consistent with the empiric emphasis in the second part of this work. A third section has, however, been added to this chapter to cover the literature which specifically refers to distance in a planning or organisational context. Accordingly the review falls into three sections:

1. Area studies of facility distribution.
2. Empiric studies of the relationship between distance and utilization.*
3. Studies referring to distance in a planning or organisational setting.

To some extent this is an arbitrary arrangement and inevitably several studies fall into more than one group so that they are referred to more than once. However some subdivision of the literature was necessary in view of the extent of the material and there are obvious advantages (e.g. comparability) in adopting a procedure similar to that of Shannon et al. It is also important to stress that as material relating to the theme of distance and medical care comes from such a variety of sources it cannot be claimed that the present review is exhaustive.

* Before discussing the literature it is intended to clarify the term 'utilization' which occurs frequently in the following pages. Utilization refers to the use made of facilities by patients. For example - an admission to hospital, an attendance at an outpatient department or a general practitioner consultation all constitute simple episodes of utilization. The summation of such episodes represents the objective demand for service which is made on any particular facility. This gives a measure of the amount of illness presenting for treatment in any defined time period. Objective demand for care differs from subjective need for care. Subjective need is made up of all the illness experienced in the community, in a defined time period, which could present for care if a range of restrictive factors were removed. It thus represents the sum of objective demand and the illness experienced which does not find its way to medical services for one reason or another. Because most medical care studies are based on analyses of routine records it will be apparent that the term utilization relates to the objective demand and not the subjective need for care. The demand for care is often expressed as a crude rate in which the number of demand episodes is related to the total defined population at risk. Demand is also expressed as a specific rate (e.g. age-specific, area-specific) where well defined sub-groups of the population are being discussed.

1) Area studies of the distribution of medical care facilities.

Enquiries into the provision of medical services have often begun by describing the distribution of health personnel or facilities (e.g. practitioners, hospital beds) for a set of areas (counties, states) and showing that they are unequally distributed with respect to population. Such imbalances have then formed the basis for the qualitative judgement that certain groups of people have had to travel greater distances for medical care than others and hence that problems of accessibility exist. As Shannon has observed this reasoning is based on an assumption

"that all people have similar if not identical needs for health personnel or facilities, that is to say, it is assumed that every set of so many persons needs a given number of physicians, otherwise the comparison cannot be used to draw conclusions concerning even relative deprivations".

It is sometimes not realised that area studies have a long history. Possibly among the earliest were the two enquiries in the Highlands and Islands of Scotland carried out by the Committee of the Royal College of Physicians of Edinburgh (1852) and by the Dewar Committee (1912). The first investigation enquired into the "Existing deficiency of medical practitioners in the Highlands and Islands" and by means of a questionnaire survey amongst the Ministers of Highland parishes concluded that "62 parishes were adequately supplied with medical practitioners, 52 partially supplied and 41 rarely if ever, visited by any regular practitioner". Using the 1841 census the Committee related general practitioners and population distribution and calculated that

"the number of persons who never receive and cannot without great expense receive the benefit of medical aid amounts to about 34,300; whilst those who receive it occasionally are in number about 90,000 making a total of 124,300 persons inadequately supplied".

The Dewar Report (Highlands and Islands Medical Service Committee Report) which followed in 1912 dealt with all medical services available in the area. Again working on a parish basis the Dewar Committee documented in detail the distribution of general practitioners, community nurses and hospitals in relation to the sparse distribution of the crofting population. They showed that the inequalities in the distribution of practitioners described in 1852 still existed and that the situation in respect of nurses was similar. Hospitals were found to be only in the major towns so that because of vast distances and poor communications from remote rural areas they were inaccessible to a large proportion of the population.

This investigation was remarkable for the clarity with which it subsequently identified the ways in which distance adversely affected the operation of health services in this area. In this respect it remains one of the most important in the medical care literature.

Apart from these two Scottish enquiries, the majority of published studies which have used an area approach to investigate facility distribution have come from the United States. There, in the 1920s and 30s, the Committee on the Costs of Medical Care¹

1. The Committee on the Costs of Medical Care was set up in May, 1927. It consisted of representatives of private medical practice, public health, the social sciences and the general public and its principal aim was to carry out research into various economic aspects of medical care.

produced a number of reports dealing with the factors affecting the public health. One of their studies¹ enquired into the availability of services for treating sickness and drew attention to the considerable variations from state to state in the ratios of physicians, dentists, nurses and hospitals to population. Within-state variations were also found and for all services the rural areas and small towns were classed as 'undersupplied' whilst the cities were seen as 'oversupplied'. These terms were used in a relative sense and no attempt was made to define an optimum ratio of personnel or facilities to population. The committee argued that, in general, urban areas were better provided for than rural ones and that access to care would be more difficult for rural populations. This would be so because firstly, these areas had fewer facilities per head of population and second, rural people would on average have to travel further for care than urban residents because of the lower density of population distribution. This initial study suggested that distance from medical care facilities might be a problem throughout the rural areas of the United States and the subsequent empiric studies which measured the relationship between distance and utilization tended to confirm this point (pp.30-34). Mountin, Pennell et al. in a series of detailed studies (1942, 1942, 1945), using routine data from the directories of the American Medical Association, confirmed and

1. Publication No. 3: Peebles, Allon, A Survey of Statistical Data on Medical Facilities in the United States. A compilation of existing material. (1929).

amplified the 1930s findings about physical distribution in the United States as a whole. High physician/population ratios were found in wealthy urban areas, low ones in poor rural areas: the trend between 1923 and 1938 was for this pattern to accentuate.

A line of research investigations of the area kind in the United States can be traced down from these initial studies through the Hill-Burton Act of 1946. (Federal Hospital Survey and Construction (Hill-Burton) Act). This legislation indicated the need for research relating to the planning of hospitals and other health facilities and one of its aims was to help individual states to provide "adequate hospital clinic and similar services to all their people". As a preliminary step toward this end each state agency was to be responsible "for making an inventory of existing health facilities, surveying the need for additional facilities and developing a state plan reflecting such needs". Largely as a result of this act, the following two decades saw a great deal of research which described the distribution of both physicians and hospitals and which highlighted the importance of distance. Localised studies of physician distribution were completed by Fein (1954) in North Carolina and Terris and Monk (1956) in upstate New York. The latter study stressed, more than others, that marked differences in physician/population ratios existed in urban as well as rural areas and that the trend was for middle and high income urban neighbourhoods to become increasingly better provided for than low income areas. Despite this urban finding, however, the major emphasis in studies of physician distribution continued to be on the deteriorating situation in rural areas.

Up to this point the studies were useful in drawing attention to the imbalance in physician distribution and in prompting consideration of access problems. However they were too superficial to permit of more refined analysis of the distance problem. For one thing their dependence on mean figures (e.g. ratios) for each administrative unit ignored the spatial variation which might occur within an area. For example, a low overall physician/population ratio for a county or state might mask local areas of high provision within the unit. A further defect of these early studies was that they rarely distinguished between the distribution of general physicians and specialists. For these reasons it became apparent during the 1950s that if the question of access to care were to be evaluated further by this area approach then within-area variations should be studied. Also the distribution of specialists and general physicians should be considered separately.

In response to this need a series of more detailed enquiries was made between 1954 and 1960 in which the distribution of physicians was examined on the basis of individual settlements. Most of these studies compared lists of towns with and without physicians (Anderson, 1954; Garnett, 1954; Mayo, 1960; Nelson et al., 1955). Using the presence of a town without a doctor as an index of 'physician need', they tended to conclude that considerable numbers of rural people were faced with problems of access to care. However, not all authors who have used a distributional approach have agreed with this finding. Fahs and

Peterson (1968), in a particularly detailed investigation in the Upper Midwest, (Montana, North Dakota, South Dakota and Minnesota) concluded that the access problem had been over-stressed, at least in their study area. Using Census and A.M.A. directory data they correlated maps of the spatial distribution of population, physicians and specialists. Using 15 miles and over from the nearest doctor as an index of remoteness they concluded that the distribution of physicians was not seriously deficient with respect to population. Areas without doctors were sparsely populated rural ones and, whilst they included some towns of under 500 people, the total population living beyond 15 miles from a doctor was small. The authors suggested that distance from a physician was not a sizeable problem in the area studied and that equating a low physician/population ratio with access problems in rural areas, as most previous studies had done, was taking too superficial a view.

Fahs and Peterson's own conclusions however need to be viewed with caution for they run counter to the findings of several empiric studies (pp. 30 - 34) which have shown that utilization of physician services in the United States does in fact decline with increasing distance from the centre of care. It is clear that the extent of any presumed access problem in their study hinges on the use of 15 miles as an arbitrary estimate of remoteness, a choice which is unsupported by any objective evidence as to its suitability, and which, in addition, is applied uniformly throughout a large area of varying topography. The arbitrariness

of their index of remoteness is underlined by the authors' reference to the fact that consultants would have chosen thirty or forty miles. These estimates by physicians and consultants are so discrepant that both need to be queried. Their obvious subjectivity also underlines what is the most evident limitation of using area studies in this way - no matter how refined the analysis of distributional patterns becomes they are unable to provide conclusions about people's actual behaviour. Essentially, area studies of facility distribution are exploratory. The most they can satisfactorily achieve is the description of an existing situation on the basis of which questions can be raised for further study.

Shannon et al., have referred to a further inherent defect in the use of political units in these area studies which also prevents the drawing of detailed conclusions about possible distance effects. This concerns the lack of coincidence between the boundaries of the units and the actual catchment or service areas of a physician or hospital:

"Political units are ordinarily used because statistics are available concerning them, but all studies which examine individual behaviours show medical care services moving across these boundaries. Indeed, the discrepancy between political units and the sociological interactive community is so great for metropolitan areas as to have led to the concept of the standard Metropolitan Statistical Area, which overlaps counties and which possesses sub-structures demanding analysis. Census tracts help, but do not handle, this problem. Even outside of metropolitan areas, boundaries are difficult to establish for medical care service areas. There are seldom cases in which lines may be drawn as boundaries without considerable movement across them. Health Service Areas in a system allowing freedom of choice are probabilistic

and interpenetrating. They are not discrete geographic units. The use of areal units is from one viewpoint a generalisation of distance, but from another a substitute for analytic measurement"

Recognition of this problem resulted in a line of research beginning in the 1950s, which sought to delineate medical service catchment areas as accurately as possible. (Ciocco and Altman, 1954; McNamara and Hassinger, 1956; Kaufman, 1956; de Visé, 1966; Drosness et al., 1965).

The discussion of area studies of facility distribution so far has been largely restricted to the question of physician supply in rural areas. Despite the fact that this topic has continued to interest research workers in the United States the question of hospital provision became of interest from the mid-1940s. The original work of the Committee on the Costs of Medical Care (Publication No. 3. A Survey of Statistical Data on Medical Facilities in the United States) had drawn attention to the maldistribution of hospital beds with respect to population and in 1947 the Report of the Commission on Hospital Care also highlighted the gross imbalance of provision.¹ Rural areas, especially low income ones, were shown to be deficient, mainly as a result of inadequate hospital building during two decades of depression and war. It appears to have been accepted without question that distance to hospital care for the populations in many of these underprovided areas was too great. The coincidence of the Commission's report with the implementation of the Hill-Burton Act ensured that priority was given to rectifying the position in these areas. Minimum standards of provision were established in

1. Commission on Hospital Care, (1947). Hospital Care in the United States. New York.

the Act using the crude index of beds/population as a rough measurement of need and during the first two decades of the Act's operation a major emphasis was placed on improving the distribution of beds in relation to population. De Vise (1966) reports that these basic distributional problems in rural areas have been largely rectified as a result of two decades of intensive hospital building.

In the United States in recent years however one of the main issues to attract attention has been the growing imbalance between existing hospital provision in the inner zones of metropolitan urban areas and the rapid development of demand for care in the newer rapidly developing suburban communities. This theme will be taken up in more detail later in this chapter. (pp. 63 - 65) It will be sufficient to note its existence here for whilst this question of urban hospital distribution has become significant the use of the area approach in its study has largely ceased to be of importance. No major study dealing solely with the distribution of hospitals in relation to population in urban areas seems to have appeared in the last 15 years. This reflects the weaknesses of the method for analytic purposes in a situation where there are large numbers of hospitals with a maze of interpenetrating catchment areas and complex patterns of patient flow. In these situations the research emphasis has shifted from documenting areal patterns of distribution to more functional enquiries aimed at understanding the factors which contribute to complex utilization patterns. This in turn reflects a move away from the attempt to meet the unmet need in low income areas which

was a central issue immediately after the war; now the focus is on urban areas where the major problem is how to devise and organise integrated hospital systems in which efficiency and economy of operation can be optimised. In response to these developments research techniques have increased in sophistication and whilst study of the distribution of facilities remains a basic step in many enquiries it is no longer reported on as a technique of major research interest.

Nevertheless, in retrospect, the use of the crude areal approach was useful in focussing attention on major distributional problems particularly in the Highlands and Islands of Scotland and in rural areas of the United States. In each case distance was implicated as a factor affecting access to care and the studies served as a starting point for further enquiries. Many of the empiric investigations of utilization in relation to distance developed from the observations made by the use of the areal approach. These empiric studies will be considered next.

2) Empiric studies of the distance factor in the utilization of medical care services.

Investigations into the relationship between distance and the use of health services also date from the last century. Yet, despite this long history, it is evident from contemporary medical care literature that the topic continues to be an important one for study. Indeed, the complexity of the way in which distance affects different groups of people using medical care facilities has only recently begun to emerge.

The two enquiries into the available medical services in the Highlands and Islands of Scotland referred to earlier (pp.19-20) made detailed reference to the way in which distance acted to the disadvantage of both the patient seeking care and the practitioners who provided it. The Report of the Royal College of Physicians in 1852 pointed out that the sick would often be deterred from calling for a doctor because of the high cost of fees that would result from the practitioner travelling a long distance. Doctors also complained about the distance they had to travel to patients and this was seen by the committee as one factor amongst others which made the Highlands an unattractive and underprovided area.

"Only 4 gentlemen [practitioners] state that they have no complaint to make; all the rest appear to regard their lot as a hard one; and complain, some of the hardships and dangers to which they are necessarily exposed in travelling great distances by sea and land in all weathers, over bad roads and in crazy boats...."

The findings of the Dewar Committee (1912) showed that the inter-related factors of large distances and slow travel continued to be two of the root problems affecting the use of all medical services in the Highlands and Islands in the early part of this century. The amount of work that general practitioners could handle in this area of rugged terrain and vast distance was severely restricted by the "defective means of locomotion and communication". Thus, daily care could not be given to patients who needed it unless they lived in close proximity to the doctor's house. Again, the prompt supply of drugs to patients in outlying

areas was frequently impossible; often several days would elapse between a visit from a doctor and the arrival of necessary drugs from the nearest available town. For many patients with meagre incomes, the cost of calling a doctor was prohibitive because of the travel-costs involved, whilst access to a distant hospital was not only slow, but, because of the arduous nature of the journey, frequently dangerous for seriously ill patients. Both Highland studies were carried out in an area characterised by extremes of distance and at a time before the widespread development of modern forms of road and air transport. The impact of distance was therefore seen as being obvious and widespread and documentation of the distance problem was in general terms without any of the quantification common to present day studies. Subsequent studies of utilization became much more restricted both in their focus of interest and in the size of the geographic territory in which they were mounted.

Beginning in the 1920s a series of studies in rural areas of the United States showed how distance affects the use of physicians' services. Most of these studies used the retrospective interview technique to enquire into the incidence of family illness and the resulting demands placed upon medical services, especially the physician.

Lively and Beck (1927) were the first to examine this question in Ross County, Ohio. They considered the 12 month illness experience of samples of rural families and found inverse relationships between distance and the number of home calls by

physicians and office calls by the patients. This study was not rigorous enough to satisfactorily explain the reasons for these patterns. However, because the distance finding applied particularly to families in a poor farming community and the operation of a mileage charge was standard physician practice, the authors suggested that the cost factor as an expression of distance may have been influential. Wilson and Metzler (1938) in a similar enquiry in Arkansas produced almost identical findings to those of Lively and Beck. People living within one mile of a doctor used his services in a higher proportion of illnesses experienced and averaged a greater number of calls per case, than families living further away. Little research in this field appears to have been undertaken during the second world war but similar types of enquiry continued thereafter. Kaufman and Morse (1945) in a morbidity survey in a farming community in rural Missouri found a positive relationship between areas of high illness experience and distance to physicians but this study did not enquire into patterns of service use.

Contrary to the general trend of findings Mather (1948) reported no variation in utilization of physicians' services with distance in two rural areas in Pennsylvania. The areas concerned were relatively prosperous and physicians did not operate a mileage charge. Instead, a small charge was made to all patients for home calls on the basis of broad distance zones of residence. Mather suggested that as these zonal charges varied only slightly the cost differences in acquiring care for people living at

varying distances were insufficient to act as a block to seeking care. Hoffer, Gibson et al. (1950) in a detailed enquiry in Michigan attempted to assess the extent of unmet medical need in families in both rural and urban areas. They found that as distance from a town having a doctor increased so did the amount of untreated illness in rural families. A similar direct relationship was found between distance from a doctor and the proportion of people in the study who had none of their illness treated by a physician.

Up to this point many of these distance findings emerged almost incidentally from studies which were principally concerned with examining morbidity experience as one aspect of the social, cultural and economic life of rural communities. The first study specifically to examine the interaction between distance and the use of medical care services appears to have been that of Jehlik and McNamara (1952) in rural Missouri. A particular aim of this study was to try to provide more detailed information about the impact of distance on the use of services by rural people. Up to this point, apart from the incidental findings just reviewed, most of the argument about the access difficulties facing rural people rested on deduction from the area studies of gross differences in facility and personnel distribution which were previously discussed. Jehlik and McNamara saw the need to provide more detailed data about actual patterns of service use if greater understanding of the reasons for variations in the utilization of health care services was to be achieved. This

enquiry looked retrospectively at the morbidity experience of approximately 2000 people in 858 farming households living in two rural communities of contrasting socio-economic conditions. Two specific hypotheses were tested:

1. That distance would be inversely related to the use of both physicians and hospitals.
2. That distance would be positively related to the amount of bed illness experienced at home.

The findings supported both of these hypotheses in each area studied, except for the question of hospital use. Using as a measure of utilization, physician calls per 1000 days of bed illness, they showed that the highest rates of call occurred to people living closest to the facilities and as distance increased more people experienced bed illness without calling a doctor. The inference placed on these findings by the authors was that families living further away from the facilities tended to limit their calls to curative rather than preventive purposes. It was not possible to go beyond this general interpretation to enquire into other possible reasons for the patterns of use in relation to distance as no information relating to factors such as diagnosis and physician preferences of patients was analysed.

Ciocco and Altman (1954) also examined the hypothesised negative relationship between distance and the use of general and specialist physicians in a study in West Pennsylvania. The authors reasoned that because physicians located themselves in centres of population the tendency was for them to reduce distance

between themselves and most of their patients so that access problems should only exist for people living outside the towns. No meaningful association was found between distance and the frequency with which patients saw their general practitioner but the frequency of patient-contact with specialists dropped sharply with increasing distance. The authors argued that these results reflected the relatively uniform distribution of general practitioners throughout the study area and the more restricted geographical distribution of the specialists. As the study did not examine the subjective illness experience of the community and took no account of the people who therefore may have been ill but who did not use the available services the conclusion was reached that distance to specialists might be a greater problem in this area than the study had revealed. For the same reason it would appear that Ciocco and Altman were unwarranted in drawing the conclusion that distance posed no problem in gaining access to general physician services.

On balance the findings from most of these early studies of physician utilization in the United States lent support to the original view of the Committee on the Costs of Medical Care, namely, that rural residents were not so well cared for as urban ones and that this was partly due to access difficulties due to residence at a distance from facilities.

After the Second World War studies of medical care utilization increased considerably in both the United Kingdom and the United States following upon the National Health Service Act

1946 and the Hill Burton Act 1946 respectively. In both countries it has been the hospital services which have been studied most intensively and two complementary lines of research have emerged which have revealed more about the relation between distance and utilization. The first is descriptive research which has usually analysed the patterns of demand that have been made upon individual hospitals or have been made by individual communities upon groups of hospitals. It includes many examples of the catchment area or patient origin type of study which have described the geographic origins of patients, sometimes as a prerequisite to the planning of new facilities. The second type of enquiry has sought more fundamental information about the factors which influence people to demand care at one particular hospital in preference to another. Inevitably, much research of this type has been concerned with seeking an understanding of how the general practitioner - hospital referral process works as it is by this means that the majority of inpatients and a large proportion of outpatients reach hospital. Both lines of research have shed light, often incidentally, on the way distance affects utilization patterns. In addition, the distance factor has occasionally been investigated specifically to assess its influence in utilization patterns. Finally, a few papers have examined the impact of distance in other situations in medical care, for example in relation to the outcome of road accidents and in the organisation of general practice. Each of these areas of study will be discussed in turn.

Two complementary findings have emerged from catchment area studies of single hospitals and enquiries into the use of hospitals by defined communities. First, the majority of in-patients and outpatients receive care at the hospital nearest their own homes, a finding which applies in both advanced and under-developed countries. Second, most hospitals draw the majority of their patients from close at hand, with decreasing proportions coming from increasing distances away. (Southmayd and Smith, 1944; Health and Sickness Records Bureau, 1948; Nuffield Provincial Hospitals Trust, 1955; Barr and Davies, 1957; Logan and Forsyth, 1960; Evans and Wakeford, 1964; Oxford Regional Hospital Board, 1961 and 1965; King, 1966; Airth and Newell, 1962; Gruer, 1970).

These general conclusions reflect the urban locations of most hospitals and the fact that in Britain the majority of people live in urban settlements. The hierarchical arrangement of services however, with specialist facilities usually available only in larger centres, results in modifications to this pattern. The catchments for specialist hospitals are often extensive so that the predominance of local communities as contributors of patients may be less evident. Again, some communities, lacking specialist facilities may send considerable numbers of patients out of the local area to seek care. (Health and Sickness Records Bureau, 1948; Morrill and Earickson, 1968; Airth and Newell, 1962). Two outpatient enquiries (Oxford Regional Hospital Board, 1963; Montgomery, 1968) have also shown that certain clinics (e.g. those dealing with Chest, Paediatrics, Orthopaedics, Ear,

Nose and Throat, Dermatology, General Medicine and General Surgery) serve predominantly local populations, drawing most of their patients from within 5 miles. Taking these findings from isolated enquiries together it is apparent that in Britain there are considerable differences in the distances that people go for in-patient and outpatient care and that the observed variations are related to the level of service provided by a hospital and its geographic location in relation to population density.

These general points have been confirmed in striking fashion by Morrill and Earickson's comprehensive enquiry into hospital utilization in the Chicago Metropolitan area (1968). This study analysed the distances people travelled for inpatient care to individual hospitals to see whether there were consistent variations in patterns for different types of hospital. 1965 in-patient data for 30 of the area's hospitals was used and a marked relationship was found for each group of hospitals in respect of the mean distance of patient travel and the patterns of decay function. Mean distance of travel was greatest for research and specialist hospitals (8.9 and 7.8 miles respectively) and least for small city hospitals (3.0 miles). Geographically isolated hospitals (e.g. satellite city hospitals in the outer Metropolitan area) also had a high mean distance of patient travel (6.8 miles) confirming that location as well as range and type of service offered was an important determinant of the distances people went for care. The patterns of decay function also varied markedly with hospital type and location. The proportion of 'inner patients'

cared for (i.e. who lived close to a hospital) increased where hospitals were isolated or where population densities decreased rapidly (e.g. the satellite hospital of Gary, which is separated from Chicago by rural areas) but decreased with degree of specialisation. Overall, Morrill and Earickson recognised 6 different types of hospital on the basis of size, range of facilities and geographic location, each with its different patterns of decay function and proportion of inner patients served. The analysis confirmed the expectation

"that hospitals offering greater volume of service will similarly generate greater demand; that hospitals offering services of unusual quality and renown will attract patients from greater distances, [and] that spatially isolated hospitals will be able to attract higher proportions of patients in their vicinity than hospitals in competitive clusters."

Similar general findings have emerged from Gruer's study (1970) of outpatient attendance at cottage and district hospitals in the Scottish Border Counties.

However, although it is common for hospitals to draw the majority of their patients from local communities this is not a universal pattern. In special circumstances there may be no rapid fall off in the geographic origins of patients with distance as Acheson, Blaney et al., (1963) and Montgomery (1968) have shown in their studies of outpatient attenders at two teaching hospitals in London. Acheson found that almost 50 per cent of outpatients interviewed in a random sample attending Guy's Hospital came from beyond 5 miles and a third from beyond 10 miles from the hospital. Montgomery in a similar enquiry at St. Thomas' also found a high

proportion of patients coming from considerable distances. These peculiar findings result from special circumstances which include the fact that these two teaching hospitals are located near the centre of a large commuter region. This point is elaborated further below.

The principal value of these descriptive catchment area studies has been to emphasise the geographic relationships between hospitals of different types and the areal extent of the populations they serve, and between individual communities and the centres at which they seek care. Where studies were based on individual hospitals however the results have been somewhat restricted in their value. Of greater significance have been the studies of Morrill in Chicago, Airth and Newell on Teeside and Gruer in the Scottish Borders which have explored patient flows in relation to a system of hospitals in an area. But even these enquiries which have provided more comprehensive information than the ones based on individual hospitals, have still dealt mainly with hospital use. In order to obtain a clearer picture of how distance affects the total demand of a community for health care it is necessary to look also at the use made of other branches such as the general practitioner service which may be used as an alternative to hospital care. Finally, the patient origin studies do not give much insight into why patients might arrive at one and not another hospital, where alternative centres for care exist, nor do they shed any light on how a factor like distance might affect a hospital's policy on important matters such as the length of stay

of patients. Several enquiries have shown that distance is a factor affecting issues of this nature.

In Saskatchewan the investigations by Myers (1953) and Roth and Roemer (1955) into the use of inpatient facilities illustrated how patterns of hospital utilization were affected by the impact of distance in another branch of the health service. In this area, where no financial barriers to seeking care existed (94% of the total population were covered by the Saskatchewan Hospital Services Plan Insurance Scheme), they found rural inpatient utilization rates were consistently higher than in the larger urban centres. This was not to be accounted for by demographic variations in the respective populations but it was correlated with marked differences in the supply of hospital beds and physicians. Rural areas were deficient in physicians and well supplied with beds whilst in urban areas the position was reversed. After a complex analysis of comparative inpatient utilization data for urban and rural areas covering factors such as length of stay, number of readmissions, case-fatality ratios and admission by diagnostic group the conclusion was reached that the principal causes of the urban-rural utilization difference were the low density of population and the poor road system in rural areas which greatly increased the cumulative distance and time spent travelling by rural practitioners. Roth and Roemer concluded that this factor alone would increase the pressure on general practitioners sufficiently to make them use hospitals as alternatives to general physician care in the community. This assumption was supported

by a further extensive analysis of the inpatient data which showed that in the rural areas compared to urban areas, lengths of stay were shorter, more patients were admitted from 'healthy age-groups', and higher admission ratios occurred for minor surgery (e.g. teeth) and for diagnoses such as influenza and bronchitis. The authors concluded that one way to reduce hospitalization would be to drastically improve the road system in rural areas to speed up travel and cut down the isolation of communities.

Aromaa (1968) has reported some interesting conclusions from a Finnish study (Vauhkonen, 1967) dealing with the relationship between distance and inpatient utilization in the area in and around Helsinki. The city possesses a university teaching hospital whilst in the surrounding region some municipalities have their own general hospitals whilst others have none. The main points to emerge were as follows:- The rate of inpatient utilization of the university teaching hospital in Helsinki declined with increased distance. Up to a distance of 400 kms. from the capital the referral rate to the teaching hospital was consistently higher from those municipalities without facilities of their own than by those which had their own hospitals while beyond that distance the situation was reversed. The use of the teaching hospital by all municipalities declined with distance from the capital but it did so most rapidly in the case of the municipalities which did not have their own hospitals. These findings were interpreted to mean that where municipalities did not

have their own facilities general practitioners referred some patients to the teaching hospital who were not really in need of such a specialised standard of care whilst consultants from the municipal hospitals were probably more selective. Aromaa argued that in such a situation the provision of more municipal general hospitals might reduce the number of patients travelling unnecessarily over fairly long distances. A final point to emerge from this study concerns the fact that beyond 400 kilometres from Helsinki the utilization rate from municipalities without hospitals fell below that for municipalities with them. This suggested that in populations living at considerable distances from the teaching hospital even cases requiring specialist care may not have been reaching hospital.

In the United Kingdom one of the most interesting studies concerning distance and its influence on the use of alternative inpatient facilities is the paper by Acheson and Hobbs (1966) dealing with perinatal mortality and the organisation of obstetric services in the Oxford area. Through an analysis of the routine obstetric records for this area for 1962, the perinatal mortality experience of high risk group mothers and the variation in use of consultant obstetric services by practitioners in 55 general practices were examined. Two principal findings emerged in relation to those practices which had more convenient access to a general practitioner maternity unit than to consultant care (i.e. where the distance between the practice surgery and the general practitioner unit was less than the distance between the

practice surgery and the consultant unit). First, for mothers in high risk groups perinatal mortality was significantly higher than in other practices and a direct relationship existed between distance to a consultant unit and the level of perinatal mortality. This could not be fully explained from the data available. Second, a markedly lower proportion of mothers was booked for consultant care in these practices than in those where access to a general practitioner unit was less convenient. In the practices with easier access to a practitioner unit there was a strong inverse relationship between increasing distance to consultant care and the fall off in the percentage of mothers booked for that type of care. Hobbs and Acheson concluded that for all risk groups where there was convenient access to a practitioner unit it was used to some extent as an alternative to consultant care. Further, in these practices, distance had a profound effect on the bookings for consultant care by all risk groups of mothers. It was not possible to tell from this study to what extent these patterns reflect the attitude of mothers or practitioners to the relative merits of consultant and practitioner care.

The studies of inpatient utilization patterns discussed so far were all based upon the examination of routine records. Studies of the factors affecting the use of outpatient facilities have also been made and as these enquiries have often used interviews they have been able to shed more detailed light on the complex way in which the referral process operates. As with inpatient patterns

distance has been found to affect patterns of outpatient attendances.

Williams, White, Andrews et al. (1960) in a study of patient referrals to a university clinic in North Carolina tested two specific distance hypotheses. 1) That the further away from the university medical centre that the patient lived the more 'specific' would be the physician's reason for referral (i.e. that the physician would have delineated the patient's problem and be seeking specific help such as treatment that was not locally available). This hypothesis was substantiated in that 72% (n = 18) of patients who were referred for specific reasons lived more than 70 miles away from the clinic. 2) That more patients from nearby would be 'self-referred' to the clinic than from further away. Here, 65% (n = 43) of the patient initiated referrals came from within 70 miles of the clinic. Williams et al. concluded that either distance or some associated factor was an important determinant of referral. An interesting point that emerged was that despite the clarity of this finding the physicians themselves did not appear to be aware of any relationship between distance and the specificity of their referrals.

Several studies of outpatient utilization patterns have been carried out in London, especially in connection with the major teaching hospitals. Acheson, Barker and Butterfield (1962) studied referral patterns in two London boroughs where a choice of care existed between three regional hospital board and three

teaching hospital departments. Interviews with 73 general practitioners showed that accessibility to an outpatient department nearest the patient's home was the major factor considered by the practitioners in making referrals (accessibility was determined by practitioners' subjective assessments of distance and availability of public transport). In 38 of the practices where patients made their own choice the most convenient department was also most frequently chosen.

Butterfield and Wadsworth (1966) in their study of a random sample of outpatient attendances at Guy's found that a high proportion of local people used the department because it was nearest to their homes but as distance increased the influence of the general practitioner in selecting this centre for referral became the dominant factor. Of the "high referral practitioners" involved in this study many lived well outside London and the further away that they lived the more likely were they to have been trained at Guys or to have a partner who was trained there. Patients belonging to social class I and aged between 15 and 65 were disproportionately represented in this study and a high proportion of them said they came to Guy's because they worked close to the hospital. Considering all of these facts together the authors concluded that the patterns of use were determined by a number of interrelated factors such as the location of this hospital at the centre of a large commuter region, convenience of access for local people and the professional links with the hospital possessed by many of the practitioners working in the outer

catchment area. Similar findings to these came from Montgomery's study of outpatient attendances at St. Thomas'. Gruer too (1970) in her study of outpatient referrals in the Scottish Borders found evidence that professional links between general practitioners and hospital consultants could result in patients travelling much further for hospital care than the nearest and most convenient location. In addition she found that a significantly higher proportion of new referrals for outpatient care lived within 3 miles of a practitioner than beyond this distance but this finding could not be accounted for on the basis of the data collected.

Apart from these groups of inpatient and outpatient enquiries several studies have recently focussed on distance and its influence in specific hospital situations. Thus Weiss, McCauley and Pincus (1966) have examined distance as a factor affecting the release of patients from state mental hospitals whilst Mellsoy (1969) studied the effect of distance on admissions to mental hospital, and Adams (1968) looked at the impact of distance from care on the outcome of rural road traffic accidents in Australia.

Weiss, McCauley and Pincus analysed the data relating to 1300 first admissions to the two state hospitals in Wisconsin in 1960-1 in an attempt to test three distance hypotheses. These hypotheses and the reasoning behind them were as follows:

- 1) duration of stay would be directly related to increasing distance of residence; this would be so because the custodial

function of the state hospital implies an element of risk in releasing a patient back to the community and the possibility of losing contact with a patient would appear greater to the institution in the more distant cases; in addition after care would be more difficult to arrange. 2) a direct relationship would be found between increasing distance and achieving a conditional, as opposed to direct, discharge. 3) the degree of impairment on release would be inversely related to distance. The reasoning behind the last two hypotheses was that greater assurance would be needed by the institution that the more distant cases would not need to be recalled. The analysis was carried out on the basis of four distance zones: covering the host county, counties at <50 miles, at 50<100 miles and >100 miles. The three hypotheses were confirmed and the authors interpreted the results as follows:- first, the hospital administrators required more assurance in the case of patients living at a distance than for those living nearby; second, that the geographical position of the hospital significantly influenced release policies independent of the clinical or social status of the patient; third, because of their centralised locations in extensive catchments both hospitals were restricted in their ability to develop after care programmes relevant to their patient's social and clinical needs; fourth, the greatest need, from the patient's viewpoint, was not for the hospital to be near him when he entered but for it to be near him when he left. Their conclusions were considered to be relevant to a possible policy of decentralisation for care of this kind.

Mellsop (1969) in a study of 607 patients who had at least 1 admission to Ballarat mental hospital in Victoria, Australia in 1965, also tested three similar hypotheses relating to distance. These were that the nearer a patient lived to hospital the more likely he was to be referred, the shorter would be his duration of stay and the greater would be his readmission rate. The data was analysed in different diagnostic groups (schizophrenia, other psychoses, neurotic depression, other neuroses, alcoholism, personality disorders, organic dementia) and the distance zones used were identical to those used in Weiss and McCauleys' Wisconsin study (p. 47). He found that for all diagnoses combined the admission rate (per 100,000 at risk) declined steadily with distance; (the relationships for individual diagnostic groups were erratic showing that other factors were operating). The fall off with distance was less for schizophrenia and other psychoses than for the other diagnoses and Mellsop argued that this suggested that only the more severe cases were being referred from distant areas; for all diagnoses combined the shortest stays were from the local area (if stays greater than 1 year were excluded); the readmission rate decreased from 36.4% in Ballarat to 27.1% from the 4th zone.

A suggestive but inconclusive finding about the effect of distance has been reported by Adams (1967) in connection with country road accidents in Australia. Data was considered for 816 persons who died or were admitted to hospital in 1965 as a result of rural road accidents to determine "whether isolation of

country accidents in distance and time results in an excess of deaths due to delay in the arrival of expert attention or, of transportation to facilities". Two principal conclusions emerged: 69% of accidents "outside country towns" resulted in deaths but only 20% of those "inside country towns"; 42% of cases waited longer than 30 minutes for help in "outside country town" accidents but only 7% of those in accidents occurring "inside country towns" did so. The enquiry was unable to resolve whether these results related to more severe accidents outside towns, to delay in the arrival of medical help or to both but it was suggested that the topic might be explored further because of its relevance for the organisation of casualty services.

In the studies so far reviewed distance has been examined principally in relation to the use of different types of hospital services. However interest has recently developed in the way in which patient geography can affect the efficiency of the general practitioner service both from the doctors' and the patients' viewpoint. Richardson and Fordyce (1968), Sowerby (1969) and Stevenson (1970) have all stressed that the greater the degree of geographic scatter in a practice population the greater is the cumulative travel time for both patients and doctors and the less the efficiency of the arrangement for both. This point will be readily apparent in rural situations but Stevenson has stressed that it also applies increasingly in urban areas. Here, the process of population dispersal from inner city areas to the

suburbs under urban renewal programmes is a major factor leading to practice dispersal and consequent increase in travel times. This arises because at present many doctors feel compelled to follow patients to maintain their list sizes. Stevenson has also suggested that general practitioners who are faced with increases in travel time as a result of growing practice dispersal may resort to unnecessary hospitalisation of peripheral patients as a means of relieving their burden of travelling. Questions such as this are clearly worthy of detailed study.

The promise shown by this recent research into the distance variable in general practice also raises the wider question as to how rewarding a similar exploration might be in relation to the use of the whole range of our community health and social services.

As a final comment on the empiric studies a summary of the different distance measures that have been used might be conveniently given here. The descriptive phase of the studies has usually been based on some measure of objective linear distance. Of these the use of administrative units as a generalised measure of distance has been the crudest. Others have included the measurement of actual mileages between patient and provider or the construction of distance zones on the basis of these mileages. This emphasis on basic geographic distance reflects the reliance on patients' home addresses as the starting point for enquiries. In this connection Gruer (1970a) reminds us that spurious distance associations may be found which result

from incorrect coding of home addresses in routine inpatient data.

It will be apparent from the foregoing review that studies which have shown a relationship between utilization and some such objective measure of distance have frequently stopped at this point and explanation of the way in which distance operates has not been attempted. However, where this has been done the measures of distance that have been shown to be appropriate have varied with particular situations. Historically, from the patient viewpoint, travel cost of a single journey has been shown to act as a barrier to seeking general practitioner care, especially where the cost resulted from mileage charges made for home calls. Also from the patient point of view, single journey travel times have been implicated in the outcome of severe emergency and accident cases. From the practitioner viewpoint, cumulative travel time has been recognised as the most important way in which the distance variable has affected the working of the general practitioner service. Apart from these points however, little is known of the way in which distance acts to produce the observed variations in utilization which have been previously discussed. 'Convenience of access' which is invoked as the reason for people most frequently attending local hospitals implies a compound of lowest travel time, lowest cost and hence lowest effort to the patient in seeking care. Finally, the findings by Weiss and McCauley (1966) have highlighted how a hospital administration's perception of distance can influence their policies toward their patient's care.



Overall these studies appear to have implicated distance as an important determinant of use but it should be emphasised again that the work has largely been restricted to the hospital field. The general practitioner studies have been recent and few, (apart from the early physician studies from the United States) and no distance or locational studies at all appear to have been reported in relation to local authority health services. This omission is interesting in view of the fact that between them these latter two branches are responsible for handling the major work load placed on the health services.

In some respects even the utilization studies of hospitals reviewed here have been restricted. It is particularly noticeable how they have concentrated on studying the 'medical demand' placed on facilities (i.e. demand by inpatients and outpatients), whilst other important groups of user have been ignored (e.g. hospital staff and patients' visitors). Information about how these groups are affected by such factors as distance and hospital location however has considerable relevance when assessing how well a hospital is meeting the demands placed upon it and hence how efficiently any hospital is serving a community. Such questions cannot be answered by assessing medical demand alone.

Nevertheless, the conclusions about the influence of distance that emerge from the studies reviewed above have considerable implications both for further research and for planning. The need for further research stems from the following characteristics which

emerge from the findings to date: first, their restricted context; second, the recent nature of some of the major studies; third, the fact that quite short distances can exert profound effects on the choice of alternative facilities. It is likely that further descriptive research in a wider variety of health service situations will uncover equally striking associations between distance and utilization.

The principal value of the patient origin studies has been to clarify, albeit in a fairly simple way, the geographic relationships between hospitals of different kinds and the extent of their catchments. This process has not gone as far in this country as in the United States where Morrill has shown the value of taking a comprehensive view of a city's hospital system in contrast to the traditional British view of enquiring into individual hospitals. He concluded that his Chicago results were so consistent that they could be incorporated into realistic models of hospital use and that data of the kind he produced was the type that would be useful to planners seeking to estimate needs and to optimise the spatial distribution of hospitals in any particular region.

One of the most interesting points to emerge from the empiric studies dealing with the referral process is the finding from Hobbs and Acheson that even small distances can cause marked variations in utilization patterns where a choice of centres and types of care exist. This raises the possibility that distance may be a pertinent variable affecting the use of all branches of

the health service. This may especially apply to the use of local authority and practitioner services in our expanding urban communities where distance and locational questions have so far been little studied. The opportunities for research here would appear to be immense.

However, having reviewed the major utilization studies and highlighted some of the shortcomings of the research it is now intended to turn to a consideration of the distance variable in the literature dealing with problems of health service planning and organisation.

3) The distance factor and the organisation of medical Care services.

One of the main problems of social policy facing most nations is how to organise their health services to ensure their availability to those who are most in need. One aspect of this question concerns the optimum way of arranging and deploying services in geographic space. It is in this connection that findings about the way distance affects utilization have their practical relevance. This section looks at some of the major literature dealing with the planning and organisation of health services in an attempt to describe and assess how far, and in what ways, the distance factor has been incorporated into organisational thinking. Reference will again be made to some of the areal and empiric studies previously mentioned as they were sometimes commissioned by executive bodies in relation to particular planning problems.

To date the clearest responses to distance in the organisation of services have been in rural areas such as the Highlands and Islands of Scotland, the Canadian Provinces and the Australian States where sheer physical distance is an obvious problem underlying the provision of all kinds of services. It is in these areas too that the role of improved transportation and communication, as a means of overcoming the effects of distance, has been most stressed.

In their 1850 investigation in the Highlands and Islands the committee of the Royal College of Physicians saw the provision of better transport as one way of improving the efficiency of the general practitioner service.

"That in connexion with any measure that may be adopted for the relief of the existing destitution, the use of a few small steamships should be added, in which the practitioners might be conveyed to the more distant localities at certain fixed times, where and when the sick able to travel, might rendezvous to meet them".

In the same area the Dewar Committee (1912) proposals aimed at achieving a more rational geographic distribution of facilities and a more efficient use of available services through the development of transportation and communication. Finance was seen as the key for achieving a more balanced distribution of practitioners in the community. Guaranteed incomes, generous travel allowances (to meet the costs of extensive travel in daily practice) and financial help for housing were all proposed to help attract personnel into the area. By these means it was assumed that new practitioners would be attracted to the area, that they

would tend to locate in districts previously without doctors, and hence the distributional imbalance would be eased. A similar approach was adopted with regard to the community nursing service. To improve the availability of hospitals it was suggested that small cottage hospitals should be provided which would serve as local dispensaries and centres of care. This proposal for taking hospital services to the people appeared a logical step at that time with convenient private transport out of the question for most people and public transport, where it existed, rudimentary.

The Committee also recognised that the effects of distance could be overcome to some extent by making improvements to transportation and communications. They suggested that telephone and ambulance services be rapidly developed and that the provision of motor cars and motor boats for use by the medical profession might, in some places, "double the working capacity of the existing medical services". Finally, the provision of mileage allowances for practitioners was seen as one way of removing from the patient much of the burden of cost involved in acquiring a doctor's services.

The progress resulting from the recommendations of the Dewar Committee were summarised in the Report of the Committee of Scottish Health Services of 1936 (The Cathcart Report).¹ However, it was made clear that despite the improvement in the distribution of general practitioners and nurses the situation regarding hospital provision was little changed. Ideas of how to organise hospital services, however, had certainly done so and the Cathcart

1. Department of Health for Scotland, (1936). Committee on Scottish Health Services. Report. Cmd 5204. Edinburgh: H.M.S.O.

proposals for overcoming distance showed a complete turn round from those of the earlier committee. Dewar had emphasised the importance of spreading small cottage type hospitals throughout the community as the best means of making hospital care available in a situation where large distances and poor transport prevented access to hospitals which were located in only the major centres. Twenty-five years later the Cathcart Report recommended exactly the opposite for this area:-

"Generally centralisation should be encouraged, and before any decision to provide a local institution is made, the possibility of meeting the need by the extension of an institution such as the Royal Northern Infirmary, Inverness, that is fully equipped on modern lines, should be fully considered".

This change in organisational emphasis probably reflects, amongst other things, two main influences. First, the idea of regionalisation of health services which was foreshadowed in the Dawson Report of 1920.¹ Under this concept, services were to be arranged in a hierarchy leading up to a major hospital offering specialist facilities in a regional centre. The second influence was the new attitude towards travel over long distances promoted by the development of air and road ambulance services as a result of experience gained in the first world war. The Dewar Committee could not have foreseen this development at the time they reported (1912) but, by the 1930s, air transport in particular offered a means of rapid access to a regional centre for distant cases requiring urgent or specialised care. Thus, speaking of the situation in Scotland the Cathcart Report said

1. Consultative Council on Medical and Allied Services. (1920). Report: The Future Provision of Medical and Allied Services. Reprinted (1950), by King Edward's Hospital Fund for London.

"It is here that the development of an air ambulance service may be especially useful; it may for example provide the main solution of the problem of the Outer Isles".

With its advantages of greater speed and comfort over conventional land transport it is not surprising that air transport has become an important influence on the organisation of rural health services elsewhere where large distances have to be overcome. In Australia it has been used in two different contexts; first to provide basic practitioner care in the outback and second, to serve as an ambulance within the regionalised system of hospitals. The Royal Flying Doctor Service originated in Queensland in 1928 (Vickers, 1958). Here in the interior, the sparseness of the population was so extreme, with families often living between 100 and 400 miles from a doctor, that the only efficient way to organise basic preventive and practitioner services was by taking the service to the patient using air travel. Whilst this service also flew emergency cases to hospital it was not primarily designed to do so and the need for air ambulances was long recognised (Anderson, 1954). The principal need was for rapid travel, often over long distances, between country hospitals and major specialist centres of care especially for casualty and emergency cases. New South Wales introduced an air ambulance service to meet this need in 1966.¹ Roemer (1956) has described a similar type of air service in Saskatchewan for ferrying emergency

1. Medical Journal of Australia, 2, 1967, p. 526.

cases to the regional hospitals in Regina and Saskatoon from the 160 local community hospitals. This service was implemented in 1946 following the 1944 survey of existing health facilities which was carried out by the Provincial Health Authority as a prelude to post war planning (Sheps, 1945). This survey stressed the importance of understanding the geographic reality of the area and the socio-economic characteristics of its population as a basis for successful planning. It noted that distance and transport were crucial factors to be considered and it stated that one of the most urgent problems facing post war planning was the provision of "a doctor within reasonable distance and hospital facilities at least for emergency conditions". The rapid implementation of the air ambulance service was one response to this latter need.

In Britain, the first post-war publications dealing with the planning of the hospital services were the regional reports of the Hospital Survey (1946) of which the five relating to Scotland are typical.¹ In these, geographic factors such as distance, transport-routes and population distribution are frequently referred to as elements to be considered in coming to decisions about the best way to organise the hospitals within a regionalised system. However, the implementation of the National Health Act 1946 took place before objective evaluation of health service functioning had developed as a field of enquiry in this country. Not surprisingly

1. Department of Health for Scotland, Scottish Hospitals Survey 1946, H.M.S.O.

therefore, detailed reference to the distance factor by surveyors in different regions reveals subjective and often contradictory opinions which vary considerably in their depth of insight. For example, in the Western Region of Scotland the surveyors recommended that fever hospitals should be centralised in the larger towns. Referring to the question of access to large towns they commented that "the striking advance of transport services had made it possible to bring patients in safety and comfort over relatively long distances, with the result that a single hospital can now serve a wide area". Moreover, regarding accessibility they said

"our ideas have undergone a complete transformation since the beginning of the century. Modern improvements in transport have enormously increased the permissible width of a hospital area, and a journey of twenty or thirty miles today involves no more risk and much less discomfort than a four mile journey forty years ago".¹

Meanwhile, in the South Eastern Region the surveyors were reporting on the difficulties experienced in West Lothian by patients, visitors and consultants alike because of the lack of local hospitals which necessitated "long travel" to Edinburgh, at most 25 miles away.²

"The absence in West Lothian of facilities for the treatment of general medical and surgical conditions is particularly noteworthy. It has meant that persons in that county requiring inpatient or outpatient treatment have had to travel often considerable distances to hospitals in Edinburgh".

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1. Department of Health for Scotland, Scottish Hospitals Survey 1946, Report on the Western Region, H.M.S.O. Para. 62.
 2. Department of Health for Scotland, Scottish Hospitals Survey 1946, Report on the South Eastern Region, H.M.S.O. Para 38.

Referring to consultant practice they reported that "The consultant, because of the distance he has to travel is often unable to give the continuity of observation and treatment he would desire". On the possibility of future services for the Lothians being centred in Edinburgh they observed:-

"There are parts, however, particularly the Western reaches of West Lothian, which are some distance from Edinburgh [20 - 25 miles] and difficulties arise at present in the transport of patients who are acutely ill and in need of immediate medical attention. Attendance by residents in this area for outpatient treatment or follow-up also involves expense and personal discomfort".

These extracts illustrate the subjectivity of the surveyors reports. They are important in other ways too, especially the comments made by the surveyors in the South East. This was one of the first occasions that the possibility of distance being an organisational problem in an area of Scotland other than in the obvious case of the Highlands and Islands had been raised in the planning literature. This report was also significant in recognising that distance might affect more users of hospitals than inpatients, on the needs of whom so much of hospital planning literature up to this point had tended to focus.

All of these early organisational studies emphasised that the significant aspect of distance which was of most concern to the outcome of care, was travel time, especially where emergency or casualty cases were concerned. Other points already referred to were the significance of travel-time in relation to the efficient use of consultant work time, and for patients the cost and convenience aspects of travelling considerable distances to seek

outpatient care. In the subsequent literature, travel time has become the principal index of distance to be used in relation to the organising of services. This index has several merits. It is easy to acquire, it is objective and it reflects the amount of effort which is involved in travelling more realistically than the mere statement of miles to be travelled. Widespread though its use has become however, the employment of this index has been in many ways unsatisfactory notably because of the vagueness with which it has been applied.

Its use became common from the mid-1950s onwards. Bridgman (1955) in his discussion of the theory of rural hospital organisation, was one of the first to suggest the use of isochrones (lines of equal travel time) to delimit hospital catchment areas. Godlund (1959) used the technique in a practical situation when he tackled the problem of choosing the optimal locations for Sweden's projected regional hospitals. Here isochronal lines were constructed for all major forms of public and private transportation in relation to a number of alternative centres. The technique allowed the selection of the centres to be used for specialised hospitals on the basis of projected population distributions in relation to travel time of access. Sutton (1960), the United States Public Health Service (1961) and in Britain the Accident Services Review Committee (1965) have all recommended the use of travel time as a basic planning index to be used in a variety of situations. In the United States its use has been fostered in delimiting urban hospital catchment areas

especially in the large metropolitan areas where health facility planning has come to be seen as part of the wider problem of urban land use planning in general. Here the rational location of facilities has become a principal planning objective both to improve the efficiency of use of physician's time and to ensure the convenient availability of services to the public.

Increasingly sophisticated techniques have been applied to try to quantify accessibility as part of the approach towards achieving more co-ordination amongst hospital services. Travel time has been widely discussed in this context.

Marrinson (1964) in a contribution to the debate about the viability of large hospitals in inner city areas, from which population is drifting, has argued that expressway development is radically improving access times from the suburbs. For Cincinnati he claimed that such improvements would put the majority of the city's projected population in the foreseeable future within 25 minutes travelling time of central hospitals. The California Department of Public Health (1965) recognised that population density affects the choice of travel time criteria. They recommended a 60 minute and a 30 minute travel time interval for low density and high density areas respectively. Drossness, Lubin and Wylie (1965) stressed the need to develop and apply different travel time indices to different orders of hospital service. This they saw as an especially important step in view of the widespread adoption of regionalised systems of organisation in which not all services are made available at equal distances from a population

at risk - the hierarchy of services requires a corresponding hierarchy of travel time indices. It is clear from the voluminous literature dealing with area planning of health services in the United States that it is now a routine procedure to employ travel time criteria to questions of hospital locational planning.

The use of this index however has been in some ways unsatisfactory. For example, a single value travel time index is normally used to define a catchment area of a particular hospital. This procedure assumes a uniformity of travel speed amongst all groups of hospital user which almost certainly does not now, and probably never will, exist. This criticism is particularly valid in view of the fact that the travel time criteria adopted appear to be always based on automobile travel although it is rarely specified. Little allowance is made for the fact that considerable groups of patients and visitors, especially elderly people, who will be unlikely to own cars in future, will continue to make use of public transport. In this respect none of the American planning documents have shown the insight of Godlund who computed access times for travel by boat, bus, car, train and air and thus accounted for the travel patterns of all socio-economic groups in the community.

Despite these criticisms however, the use of travel time indices in relation to hospital planning has received much greater emphasis in the United States than in Britain. However, it has recently been mentioned here in relation to the organisation of casualty and accident services, hospital services in general and

general practice. The Accident Services Review Committee (1965) in their proposals for an integrated regionalised system of accident services suggested that, as the reduction of delay in treatment in accident cases was vital, the geographical positioning of accident units should be such that "no accident would be more than one hour's travelling time from full treatment facilities". i.e. a regional centre. This time interval presumably refers only to the travel time from the accident site to hospital. The committee stressed the possibility of using helicopters as a general accident vehicle to help meet this idealised travel time requirement. This possibility has recently been investigated both in the United States and in Britain by Jacobs and McGlauchlin (1967), Howard (1965), Foster (1969) and Martin (1970). From this work it emerges that no systematic analysis of the question of using helicopters has yet been made. Nevertheless, enough is known about the advantages and disadvantages of this type of transport (Martin, 1970) to rule it out as a substitute for general purpose road ambulance transport. For this reason the travel time interval adopted as an organisational criterion by the Accident Services Review Committee clearly requires re-examination.

In hospital planning in general in Britain distance is today increasingly seen as an important consideration, notably in relation to the controversy which has arisen around the concept of the District General Hospital. This concept was originally outlined in the 1962 Hospital Plan for England and Wales¹ which laid

1. National Health Service, A Hospital Plan for England and Wales, Cmnd 1604, H.M.S.O. 1962.

out for the first time basic proposals for the reorganisation of our hospitals. It was proposed that the District General Hospitals, which were central to the plan, would provide for acute specialties, accident services, outpatient care, some mental illness and a unit for geriatrics all on the same site. This suggestion reflected the view that the geographic separation of different specialties was no longer consistent with the best practice of modern hospital medicine. The adoption of the District General concept meant the provision of large hospitals of 600-800 beds serving populations of 100-150,000, estimates which have been recently upgraded to 200,000 - 300,000 or more.¹ Hospitals of this size will inevitably mean the creation of larger catchment areas so that from the community point of view distance to care will increase for some people. In this context the Hospital Plan commented

"The district general hospital offers the most practicable method of placing the full range of hospital facilities at the disposal of patients and this consideration far outweighs the disadvantage of longer travel for some patients and their visitors".

One implication of this statement is that in Britain distance is unlikely to prove a problem for the majority of people under the pattern of hospitals envisaged in the future. However, several authors have warned against the uncritical acceptance of this move towards centralisation of hospital services. In essence, they have all stressed that the presumed advantages of efficiency of

1. Department of Health and Social Security, The Functions of the District General Hospital, H.M.S.O. 1969.

operation of larger hospitals will be gained at the expense of greater inconvenience for the consumer arising out of a cumulative increase in travel time and that at present, we know all too little about this side of the equation.

Klarman (1965), speaking about centralization from the economic viewpoint, emphasised the need to aim at a balance between "inconvenience and other costs of additional travel time to a small number of larger hospitals against the alleged benefits in quality of care and economy of operation, and to compare the result with the costs and benefits of a network of more and smaller hospitals". In a recent publication (1970) the Office of Health Economics, discussing the best way to deploy consultants amongst hospitals, emphasised the same point. Consultants travelling between smaller hospitals can be seen as a waste of a valuable economic asset but against this must be set the time that patients and relatives may waste in travelling longer distances to fewer and larger centres. This document concluded that "there is, in economic terms, no justification for assuming that the patient's time is expendable and that he must always bear the inconvenience when seeking medical attention". Still looking at the problem in geographic and economic terms Gruer (1971) has examined the implications of any increase in centralisation of outpatient facilities in the Border Counties in Scotland. From the community viewpoint any such move would so increase cumulative travel times and costs as to markedly offset any economic saving which would arise from reductions in consultant travel. More generally, the

Office of Health Economics (1970) has eloquently challenged the original assumptions of the hospital plan that distances of travel under the proposed pattern of hospitals would be of little consequence:

"To the consumer of medical care, the advantages of access to specialist advice and modern medical equipment are obvious. The disadvantages, however, of travelling perhaps long distances and being treated in unfamiliar surroundings can be equally obvious. The continued policy of concentrating resources within the grounds of the District General Hospital will increase the size of the institution visited by out-patients, the time spent in travelling, and probably the number of cases dealt with there. In large conurbations, any extra distance should not present the patient with any greater difficulties, but in more sparsely populated areas the problems may be considerable. In East Anglia, for instance, it has been calculated that hospitals serving 300,000 people would be more than 20 miles away from 20 per cent of the population (The Hospital, November 1969), as against 3% of the population in the existing plans of 1969. There are feasible alternative approaches which could reduce inconvenience to the patient without detriment to the quality of medical care received and a number of studies have indicated a maldistribution of work at present between hospital outpatient clinics on the one hand, and general practice and health centres on the other."

It is clear from these developments that the important themes of distance, travel time and travel cost will probably receive increased attention in the continuing debate about how best to organise our hospital services.

Reference was made earlier to the recent interest in assessing how distance affects the working of the general practitioner service and in this field several authors have already applied their research findings to organisational problems. Sowerby (1969) has shown how the time spent travelling by the

practitioner has been reduced by using a mini-bus to bring patients to the surgery. This service was introduced in a single handed rural practice in Yorkshire serving a widely dispersed population. It was associated with the development of a single surgery located near the geographic centre of the practice in place of a scatter of pre-existing ones. Not only did the arrangement lead to extensive savings of practitioner travel time but the use of the bus for delivery of drugs and medicines cut down community journeys to the surgery by 30% in the first year. Richardson and Fordyce (1968) in their study in Aberdeen have shown how consideration of patient geography can lead to more objective assessment of which of alternative locations for proposed health centres would be the most efficient from the point of view of patient "access convenience".

Despite these recent papers from general practice however, distance as an organisational factor in health service planning has been largely pursued in relation to the hospital service in recent years both in Britain and North America. This emphasis in the organisational literature reflects the bias toward hospital studies in the empiric material previously reviewed, and also has the same limitations. Thus, distance and related matters such as travel cost and time of access have received almost no attention as relevant planning factors at the level of the local authority health services whilst our knowledge of these factors as they apply to general practice in Britain remains rudimentary. From

the community viewpoint the importance of distance as an organisational issue in the hospital service has been largely discussed in relation to the needs of inpatients and outpatients and professional consultant staff. Other groups of user have received scant consideration here, as was the case with the empiric studies.

More specific criticisms can be made of the way in which distance has been handled as an organisational factor. Reference has already been made to the superficial way in which inpatient travel time has been used as a planning criterion in the United States and a more fundamental point has been made in this respect by Blumberg (1964). He has argued that the emphasis given to defining patient catchment areas in space and subsequently to delimiting them on the basis of travel time has led to the situation where inpatient access time has been widely adopted as a planning criterion. In actual fact, in most hospital situations, travel time for inpatients may well be a factor of minor locational significance. Except for severe emergencies, travel time has little bearing on the outcome of medical care. Also, an inpatient usually makes only one journey to the hospital and Blumberg argued that the repetitive travel of groups of users such as visitors (daily or more frequent access) physicians and consultants, (frequent travel between different hospitals and community practices) and all other grades of staff (daily or more frequent access) might, in cumulative cost and travel time terms, have

greater significance for the choice of hospital location than the access position for inpatients. This argument underlines the fact that no base-line data exists at present about travel patterns, travel cost or travel time for any groups of hospital user other than patients and, even for this important group, very little is known. The central point then that emerges from this section of the literature review as from the empiric studies, is how little information is available about distance which can be applied to organisational questions. It is remarkable, for instance, that it has taken almost a decade for any serious questioning to be mounted from the geographic viewpoint of the trend towards centralisation of hospitals in Britain.

It is suggested that one of the most pressing needs at the present time is to provide more basic information about the way distance affects the community's use of the health services. The second half of this work is devoted to a descriptive investigation oriented to this end. The enquiry is into the relationship between distance and visiting to paediatric inpatients in a hospital serving an extensive catchment area. The reasons why this subject was chosen for study are outlined in the next chapter.

PART II

A STUDY OF FAMILY VISITING TO PAEDIATRIC
INPATIENTS IN A HOSPITAL SERVING A REGIONAL
CATCHMENT

CHAPTER 4

THE ORIGINS AND AIMS OF THE EDINBURGH SURVEY

The study to be described arose out of the review of the literature dealing with the influence of distance on the use of medical care facilities which was discussed in the previous chapter. During the early stages of this review it became apparent that hospital catchment area studies over the past twenty years had, almost without exception, focussed on the movements of inpatients and outpatients and consequently the community use of hospitals had been largely assessed on the basis of patient use. This preoccupation of catchment studies with patients reflects, amongst other things, the view that the prime responsibility of a hospital to a community is to treat its serious medical needs and also the relative ease of acquiring data about patients and their geographic origins from routine hospital records for use in research. However, attempting to evaluate how distance affects a community's use of a hospital solely on the basis of patient use is unsatisfactory. Most inpatients and a large proportion of outpatients reach hospital via the general practitioner referral process so that patient flows are to a large extent motivated by the medical profession. It is possible that other groups of people, such as various grades of staff and especially visitors, who are less directed by the medical profession, might be more affected by the frictional effects of distance than are patients.

The argument advanced so far suggests that it is not yet possible to evaluate fully the convenience of a given hospital location for a population being served. To be able to do this more information is needed about these groups of user other than patients as reliance on patient data only allows us to examine one aspect of community use. It is the intention in the remainder of this work to concentrate upon the effect of distance on visitors as it is increasingly recognised that they can play an important part in meeting the welfare needs of patients.

There has been a growing awareness over the last two decades that the hospital inpatient has important social and emotional needs just like any healthy member of society and that it is important for a hospital to attempt to meet them particularly as these needs may be aggravated by the stressful experience of hospitalisation. As the most detailed work in this area has come from paediatrics it was decided to concentrate on the situation as it applies in this specialty.

For most children and for young children in particular, it is now generally held that hospitalisation can be traumatic leading to short term emotional distress for many, longer term distress for some, and, in a few cases, even permanent psychological damage. There is also a large amount of empirical evidence and considered medical opinion that these ill effects on the young child can be reduced if the patient has frequent, or preferably constant, contact with the mother during the stay in hospital. (Bakwin, 1942, 1949, 1951; Brain and McClay, 1968; Caplan, 1961; Haller, 1967;

Illingworth and Holt, 1955; Langford, 1948; Levy, 1945; McLennan, 1949; Ministry of Health, 1959; Nuffield Provincial Hospitals Trust, 1963; Parry, 1947; Powers, 1948; Prugh, 1953; Robertson, 1953, 1958; Schaffer and Callender, 1959; Spence, 1947; Woodward, 1959; Woodward and Jackson, 1961; Wolff, 1969.) As a result, many paediatric hospitals have adopted a range of measures to encourage both mothers and fathers to be with the patient as much as possible. These include the relaxation of visiting hours to the extent of allowing unrestricted visiting and the provision of overnight accommodation for mothers in some hospitals (Ministry of Health, 1953, 1954, 1955, 1957, 1959, 1960, 1961, 1968; Scottish Home and Health Department, 1967, 1968.) However, provision of beds for mothers has not been on a large scale and it is through the promotion of daily visiting that hospitals have done most to bring parents into the hospital.

In view of these research findings and administrative developments it will be apparent that there is a need to consider the relocation of hospitals from the point of view of visitors, as it is likely that demands will continue to grow for more liberal policies of visiting to adult patients. (Cartwright, 1964; Irvine and Smith, 1964; Scottish Home and Health Dept., 1962).

From this argument the need to have information about visitors which can be applied to problems of hospital planning has practical significance in meeting the needs of patients and is not merely an academic issue. It is especially important at the present time in view of the long term rationalisation plans for

our hospital network which are currently being devised. A principal object of this programme is to produce a pattern of hospitals which will serve the community more effectively than in the past and it is anticipated that this will involve the re-location of many hospitals. Attention has already been drawn to the concept of larger district general hospitals serving wider catchments which are to be a key element in the reconstructed pattern of services. Yet, it is clear from the Hospital Plan (1962) that the concept of the District General Hospital is oriented almost entirely towards meeting the medical needs of patients more effectively. Their non-medical needs are given little consideration. Further, in one of the few references to visitors in the plan (see page 66) it is implied that, in the extended catchment areas which will result under the proposed system, few members of the public are likely to find distance a problem. Whilst recognising the importance of the arguments in favour of this type of hospital pattern it appears unsatisfactory that no information has yet been made available concerning the effect that distance might have upon the use that visitors can make of centralised hospital facilities.

On the basis of the known frictional effects of distance on human activities it appeared conceivable that variations might exist in the ability of different groups in society, particularly socio-economic groups, to use such facilities. It seemed that a study of whether or not this was the case should have considerable relevance for hospital planning, particularly in relation to questions about convenience of alternative hospital locations for given

communities. Accordingly, it was decided to set up a study of family visiting to inpatients in an existing hospital which was serving a wide area. In view of the existing evidence that children in hospital should have as much contact with their parents as possible, paediatrics was chosen as the specialty in which to work and the Royal Hospital for Sick Children in Edinburgh, was selected as a convenient local centre at which to carry out the study.

The general aim of the study having been defined, discussions were held with colleagues in the Departments of Social Medicine and Geography in order to clarify specific questions that might be examined. It was eventually resolved to limit the study to a consideration of three points. First, did the distance of a patient's home from the hospital have any effect on the amount of family visiting that took place? This seemed to be a basic question to ask in a geographical study and it was especially important in view of the cursory way in which the hospital plan treated the possible effect of distance. The second question to be examined was the relative use made by visitors of public and private transport. This was included because of the crucial role that transportation plays in the use by the public of all kinds of services yet in the medical care literature transportation is a neglected factor. Finally, it appeared worthwhile to make some attempt to decide how convenient the visitors found it to use this centralised hospital. It was recognised that the concept of convenience is a complex one involving subjective and objective

criteria and that in a descriptive study of the kind envisaged it would not be possible to explore this question in depth. Nevertheless, it was decided to consider the objective indices of travel time and travel cost which would relate to some extent to the data about transport use.

The particular hospital chosen for study was satisfactory for a number of reasons. It was the regional paediatric centre for South East Scotland and served both a local and a regional catchment area (see maps pp. 91-2). In addition the hospital operated an open visiting policy in its medical wards and had only slight restrictions on visiting in the main surgical wards. This meant that the study would be carried out with almost optimum hospital conditions for visiting. Finally the Edinburgh location for the study would greatly facilitate the data collection. Details of how the study was carried out are given in the next chapter.

Summary

Most hospital catchment area studies have focussed on the use made of the facilities by patients but by itself a knowledge of patient use does not permit a full evaluation of the convenience of a hospital location for the community who use it. The point of view of visitors also needs to be considered, particularly as there is growing recognition of the part that social support can play in meeting the non-medical and medical needs of the inpatient. However, at present very little is known about visitors' use of hospitals

and almost nothing about how it might be affected by distance.

It seems particularly desirable to make such information available at the present time in view of the trend towards more hospital centralisation involving the relocation of services and the enlargement of some catchment areas. To provide such data a social-geographical study of visiting to paediatric inpatients in a regional hospital currently serving a wide area was proposed. It was hoped that this study would provide information of general relevance for hospital planning and in particular, data that might enable us to represent the community's viewpoint more effectively in discussions about the relative merits of alternative hospital locations.

CHAPTER 5

METHODS OF THE EDINBURGH STUDY

This chapter describes the methods used in the Edinburgh study which was carried out in three stages between March 1967 and March 1968. The development of the study is summarised in Figure 1. The pre-pilot, pilot and main stages of the study will be described in sequence.

1) The pre-pilot stage

There were five objectives to this part of the study:

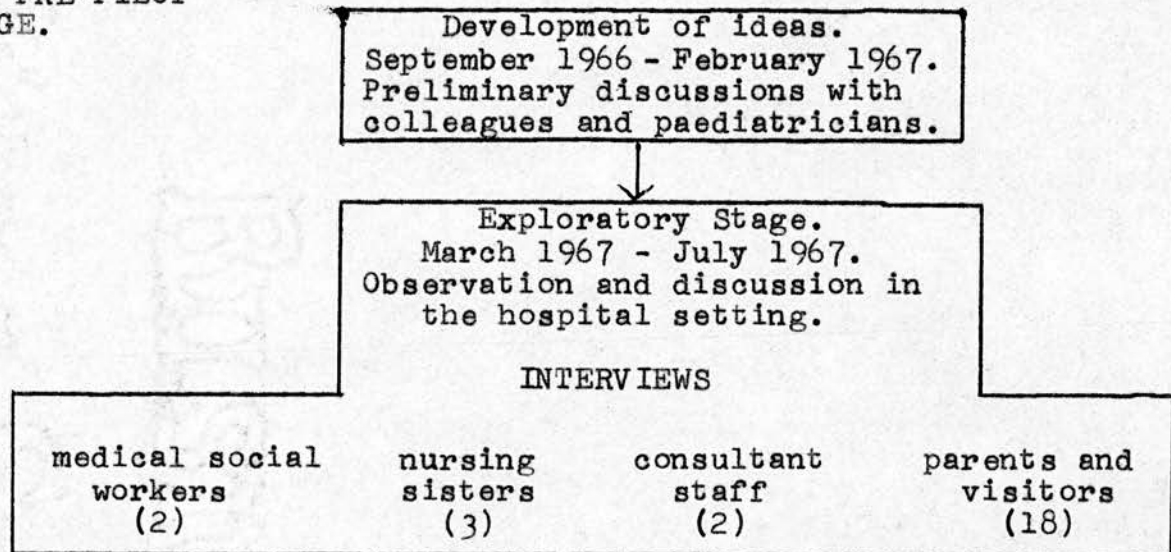
- i) To decide what data to collect and from which sources.
- ii) To design the forms on which to record the information.
- iii) To devise an administrative system to cover the data-collection.
- iv) To decide on the size and composition of the patient sample to be used.
- v) To establish good working relations with members of the hospital staff as it was clear that the success of the study would depend upon their co-operation.

In order to achieve these aims ward rounds were attended, day to day hospital routines were observed, visitors' movements were noted and twenty-five informal interviews were held. Seven of these were with members of staff (two medical social workers, two consultants, three ward nursing sisters) and eighteen with visitors to patients. For the visitors' interviews patients were chosen from medical and surgical wards and further selected to provide a wide range of ages and children living at varying distances

Figure 1. Outline of the stages of the survey at the Royal Hospital for Sick Children, Edinburgh 1967-8.

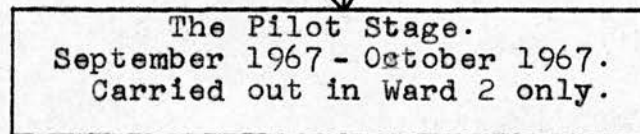
STAGE I.

THE PRE-PILOT
STAGE.



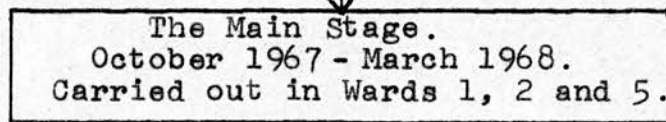
STAGE II

THE PILOT
STAGE



STAGE III

THE MAIN
STAGE



from the hospital. All of the interviews sought information about the visiting patterns of families and friends and the factors which helped to determine their visiting habits. The staff interviews were relatively unstructured compared to those held with the visitors which were based on a short questionnaire consisting mainly of open ended questions. In addition to these observations and interviews discussions continued throughout the pre-pilot stage with colleagues in the University of Edinburgh in the Departments of Social Medicine, Child Life and Health and Geography.

As material became available from these various activities decisions were made in relation to the five pre-pilot objectives. Whilst these aims are inter-related they will be treated separately for purposes of clarity.

1) Information to be collected. During the course of the enquiries at the hospital a preliminary list of the data which might be collected was drawn up. This information fell into three categories covering the patient and his hospital experience, visits made to the patient and thirdly the social, psychological and geographical factors which might influence patterns of visiting. This preliminary list can be seen in Appendix A. It was discussed with colleagues in the Department of Social Medicine and reviewed in the light of their comments. Several items were deleted particularly from the section dealing with the social and psychological factors. Thus most of the points about parents'

attitudes were omitted as being more appropriate to a study from a psychological or sociological viewpoint than the descriptive geographical one adopted in this study. The revised list of variables is given in Appendix B.

The main factors included about the patient were age, sex, length of stay, diagnostic group of illness, admission procedure (i.e. whether emergency or routine) and admission status (i.e. whether a first admission or a readmission). The diagnostic group of illness and admission procedure were included as crude measures of the patient's level of illness which, it was suspected, might affect the visitor's motivation to visit. Whilst not ideal for this purpose these indices were relatively objective and easy to acquire in contrast to the possible alternatives such as day to day assessments of patients by doctors or nursing staff.

It was decided to assign an admission status to each patient to distinguish between those admitted to the hospital for the first time during the course of the study (first admissions), those who were admitted a second or subsequent time during the study (re-admissions), and those who had been in the hospital in the eight months prior to the occasion which brought them into the study (prior admissions). The main reason for identifying the re-admissions was to avoid asking a parent to complete more than one questionnaire. The reason for recognising prior admissions was that in such cases a former hospital experience might have influenced the parents' attitudes to visiting so making them a different group from the parents of patients admitted for the first

time during the study.

All of this information about the patient was available in the routine records kept in the hospital and access to these was freely given.

The pre-pilot enquiries showed that the remaining data concerning the visiting patterns and the social and geographic factors would have to be collected from the visitors themselves and that this might best be done in two stages. As much of the information about travel and access related to the complete period of visiting this could only be collected, along with the social data, after the discharge of the patient from hospital. On the other hand, details of each visit could not be collected retrospectively as the interviews showed that visitors often had difficulty in recalling details of recent visits. The most effective way of providing a record of visiting thus seemed to be by collecting data at each visit. For this to be successful the continuous cooperation of visitors would be necessary and therefore it was decided to ask for only a minimum of data on each occasion. Three items were to be requested: the name of the patient to whom the visit was made; the relationship of the visitor to the patient and the times at which the visit began and ended. From answers to the first two items it would be possible to find out how many visits a patient received and to measure the contribution made by different visitors to the total. From the times of the visits it would be possible to examine the visiting patterns in several ways such as the length of visits and their distribution

by time of day. In addition, by dating each visiting occasion it would be possible to measure the frequency of visiting on different days of the week and to relate visits to the number of days that the patient had been in hospital.

It seemed appropriate to focus the study mainly on the contact of the patient with his nuclear family. In line with this, visitors who were members of the immediate family were to be asked to specify their exact relationship to the patient (i.e. mother, father etc.) while other visitors would be broadly grouped under the headings of "other relatives" or "unrelated friends". With this arrangement it would be possible to explore in detail the visiting activities of members of a patient's immediate family whilst one would still be able to consider the roles of the extended family and friends at least in a general way.

In keeping with the decision to focus the study on the visits of the patient's immediate family it was decided to collect the supporting social and geographic data only from the parents. The principal social factors included were: the social class of the family (based upon the Registrar General's classification according to father's occupation); the number and ages of children in the family; whether the father's workplace was in or out of Edinburgh; whether the mother was working or not. It was felt that all of these factors might affect the frequency and timing of visits which parents living at different distances from the hospital might be able to make.

The basic geographic item required was the home address of the patient. On this basis families were later to be allocated

to one of three distance zones adopted for the study (see page 93). The remaining geographic data concerned descriptive information relating to parents' travel and access patterns and included: vehicle ownership; the lowest cost for a journey from home to hospital by public transport; the shortest journey time to hospital by public or private transport and finally, details of any overnight stays away from home. This last point was included at the suggestion of the hospital staff who thought that some parents, especially if they lived at a distance from the hospital, overcame the problem of daily travel by staying in the city for at least part of their child's stay in hospital. Finally it was decided to introduce a question which might indicate the strength of parents' motivation to visit their child.

At the same time that decisions were being made about the actual data to be gathered related objectives were being considered. These were concerned with the ways in which the data might be collected and the design of the necessary forms.

ii) Methods of data collection and the recording instruments:

For reasons noted above it was proposed that the information from visitors would be collected in two parts. Thus, details about visiting would be recorded at each visit and the remaining data would be collected after the discharge of the patient. Each of these stages required a different recording system. A small card to be completed by visitors seemed to be an appropriate way of collecting information about each visit and it was decided to issue

a questionnaire to parents for the social and geographical data.

It was necessary to ask visitors to complete the daily visiting card themselves because the nursing staff could not be expected to note the necessary details especially during the day time when so many people were arriving and leaving the wards. Accordingly, considerable effort went into designing a suitable card which would be easy for visitors to complete without assistance. As mentioned above, provision had to be made for the visitor to record the name of the patient, the visitor's relationship to the patient and the times of the visit. A copy of the first design of the card which was to be used in the pilot study is given in Appendix C. It was arranged that several visiting cards and a pencil would be placed near or on each patient's bed in a holder which is illustrated in Figure 2. Instructions attached to the holder would ask visitors to complete a card at the end of each visit and to drop it in a box provided in the corridor for the purpose as they were leaving the hospital. In this way it was hoped to build up an accurate record of the visiting received by each patient during his hospital stay.

In spite of the known limitations of postal questionnaires it was decided to collect the social and geographical information in this way as there were a number of disadvantages to interviewing. Firstly, interviews at home were precluded because of the time and expense that would have been involved in visiting homes throughout South East Scotland. Second, interviews in hospital would have been very difficult to arrange as it was rarely possible

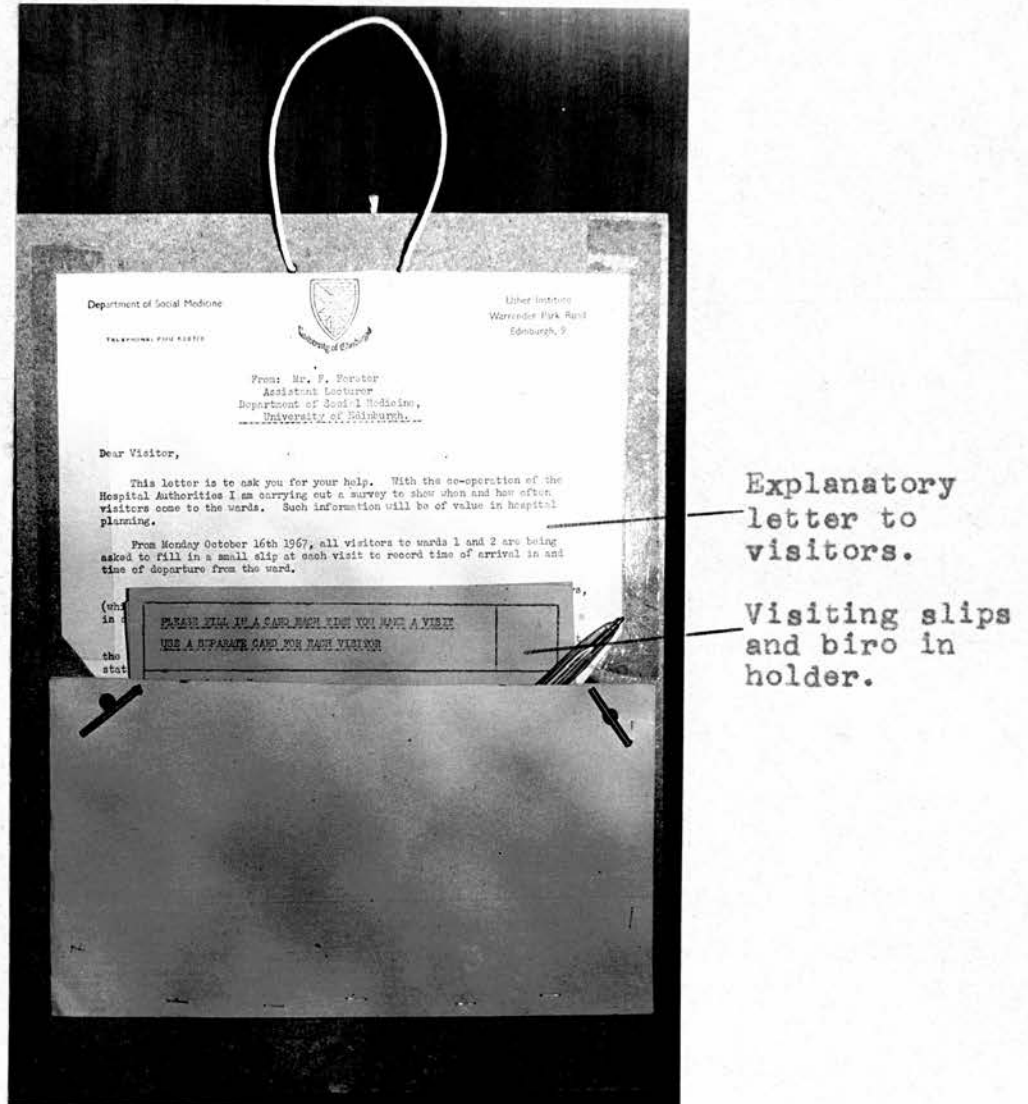


Figure 2.

The holder provided for each patient
in the sample.

to know exactly when a parent would be in the hospital to collect a patient. It was arranged that a questionnaire, limited mainly to straightforward factual information, would be given to parents for them to take home to complete and return via the post in a stamped and addressed envelope which would be provided. Copies of the covering letter and the questionnaire used in the pilot study are given in Appendices D and D₁. The questions in the first part of the questionnaire covered the social data and in the second part the geographical information as outlined above. The questions were tested for clarity with members of the hospital staff before being included.

iii) The data-collection system: administrative points: During the pre-pilot enquiries several meetings were held with the ward sisters to discuss the administrative points that would arise in connection with the running of the study in the wards. It was felt that an effective system of administration would do much to ensure the collection of a full and accurate record of visiting and would also help to achieve an efficient distribution of questionnaires.

Initially, arrangements had to be made to explain the aims of the survey to visitors, to ask for their help and to explain to them what they would be required to do. A convenient time to do this seemed to be at the time of the patient's admission as one or both of the parents invariably accompanied the child. Moreover, as this was a routine contact between parents and nursing staff at

which information was exchanged it offered a useful opportunity for explaining about the study without having to arrange a special meeting. The most convenient way of explaining about the study to parents seemed to be by letter and the nursing sisters agreed to give this along with the other hospital literature which parents normally received at this time. They also agreed to reinforce the letter by saying a few introductory words about the presence of the study in the wards. Whilst the parents were the main people to inform it was evident similar provision would have to be made for the various other visitors who usually first appeared at the hospital some time after the time of admission. The nursing staff suggested that this might best be done by leaving available at the entrance to the ward a pile of introductory letters accompanied by a notice asking visitors to take one. All of the above introductory points would apply at the admission of patients throughout the duration of the study. However, it would be necessary to have, in addition, a set of daily administrative routines to ensure the proper functioning of the data-collection process.

It was arranged that the researcher would go round the wards early each morning to check that holders were available for all patients and that each contained cards and pencils. Each evening the visiting cards that had been completed during the day would be collected from the corridor box. Also in the evening questionnaires would be prepared for issue to those new admissions who had come into the study. By these methods it was hoped to

maintain the study on a day to day basis.

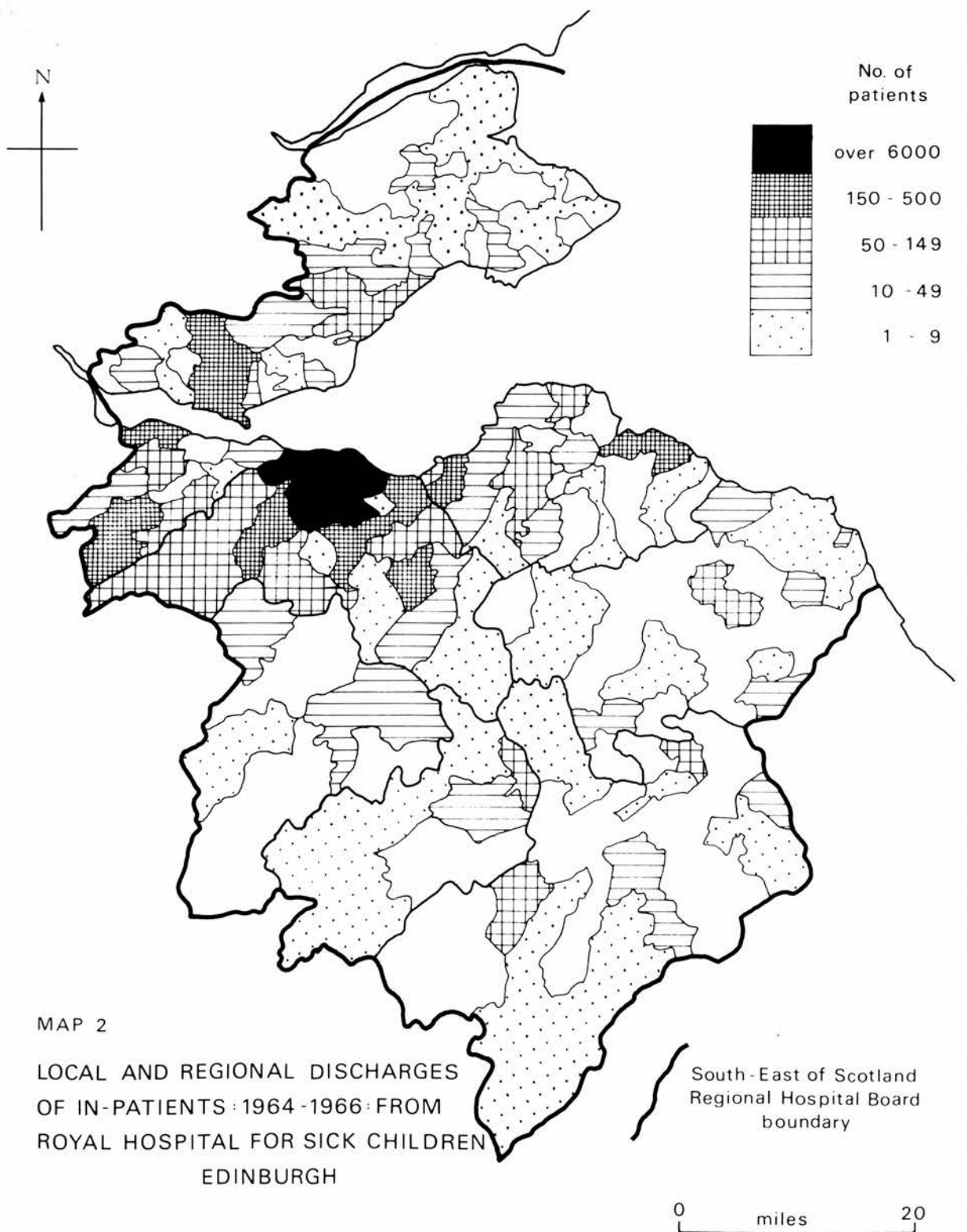
Finally, it was important to have an efficient system for distributing the questionnaire at the end of a patient's stay. As a parent almost always came to collect a patient the time of discharge provided another predictable contact point between nurses and parents similar to the one at admission. The nursing staff agreed to issue the questionnaire as part of their routine dealings with parents during the discharge procedure. It was planned that a check would be kept on the questionnaire returns and where a questionnaire was not returned after two weeks a reminder letter would be sent to the parents concerned.

In broad outline these were the principal administrative duties decided upon. The detailed ways in which they worked in practice are discussed below in the account of the pilot study.

iv) The selection and composition of the sample: The selection of the patient sample was one of the main questions to resolve during this planning stage. As far as possible the sample had to meet the following requirements. It should include a balance of patients coming from varying distances from the hospital; it should draw patients from the different units of the hospital; it should be large enough to provide sufficient data for purposes of analysis within the four months available for the field work. It was estimated that about 500 cases would be adequate.

A map of the regional catchment area served by the hospital, (Map 2) showed that about 50% of the patients came from Edinburgh,





a large number from the urban areas around the city and the remainder from the rural and urban areas in the outer part of the catchment. In order to obtain a balance of patients from varying distances this distribution suggested that the catchment might be divided up into three zones of $0 < 5$ miles (effectively the City of Edinburgh), $5 < 15$ miles and 15 miles and over. These zones would be based on real geographical distance measured along the major roads extending outwards from the hospital. The figures in Table 1 showed that of the various units within the hospital medical and surgical paediatrics would be the most suitable ones from which to draw the sample. The short length of stay in the ear nose and throat unit and the small number of patients in the specialised departments made these divisions unsuitable. Some 75% of the annual discharges were from the medical and surgical paediatric units and scrutiny of the ward records showed that their patients were drawn from all parts of the catchment area. However, if a four month sample were drawn by recording all patients who came into these divisions there would in all probability be an over preponderance of Edinburgh cases. Possible solutions to this problem were discussed with statistical colleagues in the Department of Social Medicine. One suggestion was that only a defined sample fraction of Edinburgh cases might be included. Another was to record all patients until sufficient Edinburgh cases had been included and then to record only for patients from zones 2 and 3. A third suggestion was to collect data for all patients in the four month period and to exclude some Edinburgh patients when it came to the analysis stage.

TABLE 1

Edinburgh Royal Hospital for Sick Children discharges
by age, sex, hospital division and mean duration of
stay (in days) for 1965.

Hospital unit on discharge	Sex	Age Group			Totals
		Under 1 yr.	1 - 4	5 - 14	
MEDICAL PAEDIATRICS	M	340	408	353	1,101
	F	273	333	284	890
Mean Stay	M	12	9	11	11
	F	14	9	10	11
SURGICAL PAEDIATRICS	M	92	312	462	866
	F	47	168	269	484
Mean Stay	M	12	10	7	9
	F	13	10	7	9
EAR, NOSE, THROAT	M	7	241	430	678
	F	15	172	355	542
Mean Stay	M	6	4	3	3
	F	14	5	3	4
OTHER (General Medicine, General and Plastic Surgery, Ortho- paedic Surgery, Neurosurgery, Thoracic Surgery)	M	5	28	20	53
	F	3	27	12	42
TOTAL HOSPITAL DISCHARGES	M	444	989	1,265	2,698
	F	338	700	920	1,958

At this stage of the planning it was not possible to finally resolve this problem as there were too many unknown factors which might affect the decision particularly the possibility that supervisors might be necessary to oversee the completion of visiting cards if visitors did not complete them themselves. If this proved to be the case it would not be possible to record only a proportion of cases from Zone 1 as supervisors would then have the impossible task of identifying which visitors were or were not to be included in the study.

In the circumstances a decision about this problem seemed best deferred until after the pilot study. At this stage of the planning thinking about the sample could be summarised as follows. The sample would be built up over about four months to give about 500 cases; it would be drawn from the medical and surgical divisions; a suitable method remained to be devised which would increase the number of regional patients in the study or, alternatively decrease the number coming from Edinburgh.

v) Relations with the hospital staff: From the earliest stages of the study conscious efforts were made to develop good working relations with the hospital staff as it was clear that their willingness to help would be an important factor contributing to the success of the study. First contacts were usually established by letter. Initial meetings were arranged by appointments arranged at times convenient to the individual member of staff. This approach was adopted with members of the

Medical Social Work Department and the Records Office, and with administrative, senior nursing and consultant staffs. The staff appeared to appreciate the value of the proposed study to their own work and this probably made them more interested in co-operating. They were assured that every effort would be made to avoid requesting their active help in the running of the study except where this appeared to be essential. The senior staff were kept informed of the development of the study mainly by day to day informal contact in the hospital but, where necessary, by letter. Throughout the pilot stage assistance from the staff was freely given and their contributions to the planning were invaluable. This cooperation was to continue in the later stages of the work.

2) The pilot study.

The pilot study was carried out in one medical ward during two weeks in September 1967. There were four objectives at this stage.

- i) To test out the data-collection system, particularly to see if the public would complete visiting cards at each visit.
- ii) To assess the administrative problems associated with data collection.
- iii) To test the clarity of the visiting card and questionnaire in practice.
- iv) When it became evident that some form of supervision would be needed to remind visitors to complete visiting cards a fourth aim became the defining of supervisors' duties.

The pilot stage was run as follows. All ward staff were informed, by letter, of the details of the study in the week before

it began. Letters were also made available to visitors in the ward outlining the aims of the study and requesting their help. On the day the study began all patients were provided with a holder containing visiting cards which was hung on their bed or on an adjacent wall. Throughout the pilot stage letters outlining the study were given to parents by the nursing staff at the time of admission and they also issued questionnaires at the time of discharge. The author visited the hospital daily to see how the study was running and the senior nursing staff were asked for their observations.

i) The working of the data-collection system. Most visitors completed the visiting cards and there were no complaints at filling them in several times a day where visitors made frequent visits. However, it was estimated that between 10% and 20% of visitors per day did not complete the cards. When some of these visitors were stopped on their way out of the hospital and asked to complete a card they all did so. It was clear from this experience that if the collection of visiting cards could be supervised by someone in the corridor it would be possible to collect a more accurate record in the main study but that without supervision the record would be incomplete and possibly unrepresentative to an extent that was considered unacceptable. Accordingly the need for supervision was accepted early in the pilot stage and various voluntary bodies were asked if they could help in this respect. Subsequent planning was on the assumption that continuous supervision of the completion of visiting cards would

be provided.

The other aspect of data-collection concerned the issue and return of questionnaires. This worked satisfactorily and of the 20 questionnaires issued 17 were returned without the need to issue a reminder letter. This suggested that a high rate of return might be achieved in the main study.

ii) Administrative difficulties. The author went round the ward each morning to check that holders complete with cards were available for each patient. A register was kept which acted as a central record of the study. It contained details of the patients such as the dates of admission and discharge and the issue and return of questionnaires. Each evening details of the patients admitted and discharged during the day were entered in the register. Also in the evening, the corridor box was emptied, the visiting cards were sorted and the visiting to each patient was summarised on a sheet made out for the purpose. These routines worked effectively but it became necessary to supplement them to deal with special problems.

One problem that frequently arose in the wards was the separation of patients from their holders and cards which happened when beds were moved from one part of the ward to another or when patients were moved from one bed to another. This difficulty was solved when the nursing staff agreed to move the holders in such cases when they were routinely moving the patients' temperature charts.

A further problem was that visiting days ended at midnight but it was not practicable to wait until then before emptying the box and handling the visiting record. Instead it was planned to do this at 8 p.m. by which time most visitors had left. However, a few late visits did occur between 8 p.m. and midnight and a few early visits took place between midnight and 9 a.m. on some days. In order to relate cards to their respective days in such cases the night nursing staff agreed to check the box and empty it at midnight each night. As a result, any cards present at 9 a.m. were known to belong to that particular day.

It was apparent by this stage that the nursing staff would be responsible for many of the administrative aspects relating to the data collection. In view of this and because of the high rate of turnover of student nurses it was decided to issue to each nurse who came to work in the ward a list of the duties they would be asked to carry out.

(iii) The recording instruments. It quickly became apparent that both the visiting slip and the questionnaire had significant deficiencies. The main defects of the card were the lack of boxes for recording visits by brothers and sisters, the failure to distinguish a.m. and p.m. dates, the inadequate definition of a visit and the card's poor layout and congested appearance. By failing to provide separately for brothers' and sisters' visits these had to be recorded under "other relative". As a result it was not possible to distinguish between visits made by the nuclear family and those

made by the extended family. The failure to distinguish between a.m. and p.m. made it impossible to know whether a visit at 8.45 - 9 was in the morning or evening. However, the main defect of the card was in the implied definition of a visit which it carried.

The instructions said that a card should be completed each time a visitor came to the ward from outside the hospital grounds. There were occasions however during a long visit when visitors left the hospital to go for a short walk outside the hospital grounds. It did not seem reasonable to ask visitors to complete a card each time they returned to the hospital on such occasions and in no sense could such re-entries be classed as the beginnings of new visits. It also became apparent that visitors' interpretations of what constituted a visit varied. For instance, local mothers who made visits in the morning and afternoon, but returned home for lunch in between, invariably completed two cards. On the other hand some mothers coming from a distance who visited in the morning and afternoon but who went into Edinburgh for lunch thought it was only necessary to complete one card showing a single whole day visit. To get round these problems it was decided that where a visitor broke a visit by leaving the hospital for less than twenty minutes the time spent in the ward before the break and after the break would be counted as parts of the same visit. However, if the break was longer than twenty minutes the two parts would be reckoned as separate visits. The responsibility for making sure this was adhered to was to be placed on the supervisors

who would be given special instructions to make sure that the visitors observed the rule. With this transference of responsibility to the supervisors it was possible to amend the visiting slip by omitting any definition of a visit. The only instruction now required was that visitors should complete a card at each visit.

The final deficiency of the card was its congested appearance. This was improved by making it larger in size and rearranging the items it carried. Thus as a result of the pilot study the following changes were made in the card. The original definition of a visit was removed, boxes were added for the recording of visits by brothers and sisters, provision was made for distinguishing between a.m. and p.m. times and the appearance of the card was improved. (See Appendix E)

The deficiencies of the questionnaire lay as much in the questions that were not asked as in those that were included. In the returned questionnaires the questions relating to social data were fully answered and the section on occupations provided sufficiently detailed information in every case to allow allocation to social class according to the Registrar General's classification. This social section appeared to be suitable for use in the main study. However the part dealing with travel and access was most unsatisfactory. Some of the questionnaires had only part of this information completed while others had answers clearly contradicting responses to related questions. It was clear from these inconsistencies that both the nature of

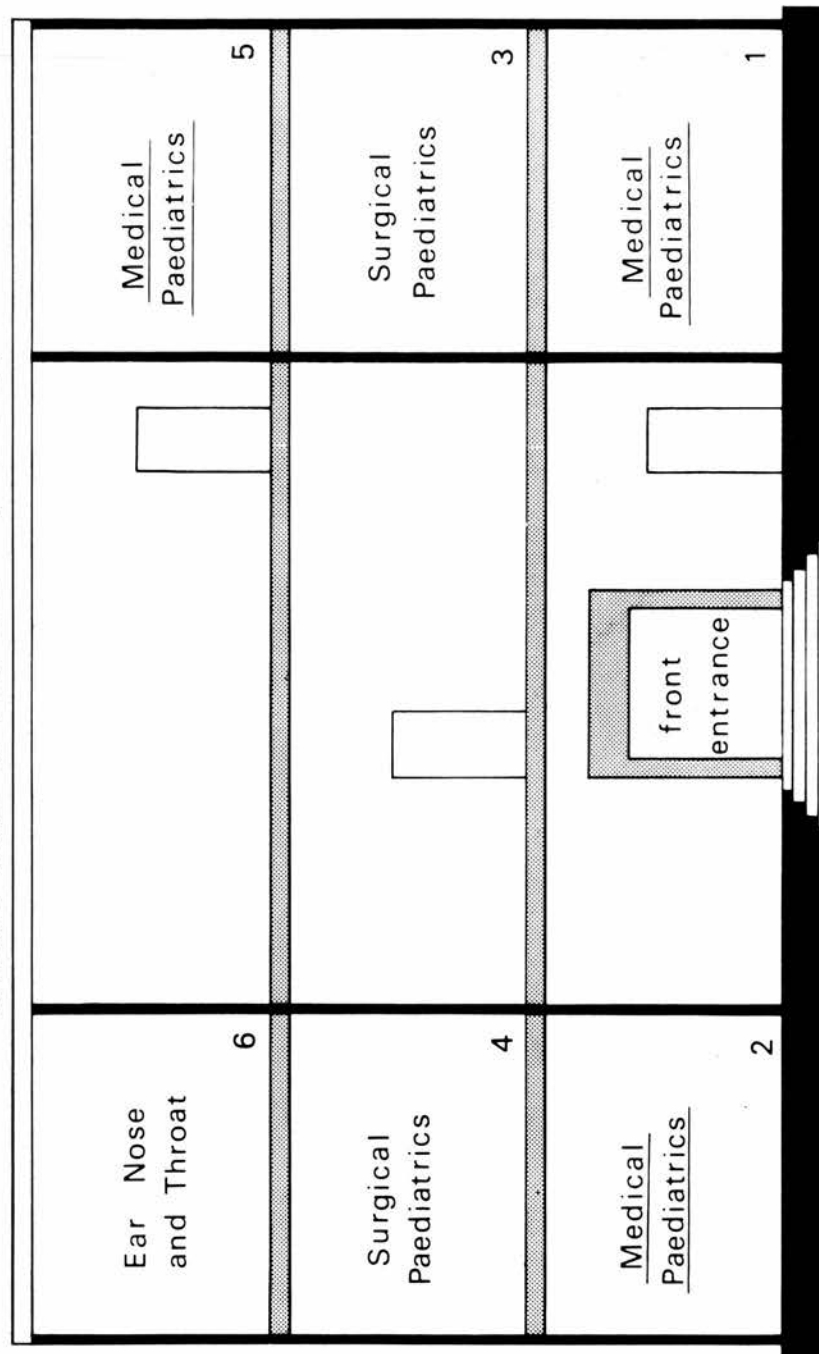
the questions and their layout were too complicated. On reflection the way in which the questions were asked revealed the author's preoccupation during the pilot phase with the complexities of the journey patterns which the interviews had indicated existed. By focussing on all of the different methods and combinations of transport that might be used the essential question of how people usually travelled to the hospital was overlooked. For the main study it was decided to eliminate most of these complex travel questions and to put in a basic question about whether the method of transport used when going to the hospital to visit was public or private. From the answers to this question it would then be possible to make estimates of travel times and costs indirectly. However, as a check it was also decided to leave in two questions relating to the cost and time of journeys between home and hospital and a new question was introduced into the social data section which had a bearing on access to the hospital. The pilot study answers suggested that many mothers were using public transport to come to hospital even though the family owned a car. This suggested that car ownership alone would not be a sufficiently sensitive index of a family's mobility potential. Rather, what was needed was some indication as to whether the car might be available for use. One basic piece of relevant information in this respect seemed to be whether a mother was able to drive. Thus, where a family said they owned transport they were also to be asked to state who drove the vehicle.

In addition to these changes two other questions were inserted at the request of the paediatricians at the hospital who were interested in the possible future demand for overnight accommodation by mothers. Accordingly, the hypothetical questions as to whether a parent would have liked to stay and could have stayed in the hospital during their child's hospitalisation were added.

Thus, the principal changes in the questionnaire as a result of the experience of the pilot study affected the travel and access section. This was redrafted to focus more on the usual methods of travelling to hospital. The final form of the questionnaire used in the main study is given in Appendix F.

iv) The duties of supervisors. In the planning up to this stage it had been intended to include patients from both medical and surgical wards. However, enquiries showed that it would only be possible to obtain sufficient voluntary supervisors to have one on duty at a time. In addition the hospital layout made it impossible for one such person to keep a check on all visitors to the medical and surgical wards. The problem of the layout is illustrated in Figures 3 and 4. Figure 3 shows the arrangement of the wards by specialty at the hospital. The six wards lay on three floors and occupied the wings of the building. Straight corridors linked the two wards on each floor. The two surgical wards it had been intended to use lay on the middle floor. Figure 4 shows that a back staircase

FIGURE 3. THE ROYAL HOSPITAL FOR SICK CHILDREN EDINBURGH : MAIN BLOCK
ELEVATION SHOWING ARRANGEMENT OF WARDS AND THE
WARDS USED IN THE STUDY (1 2 & 5)



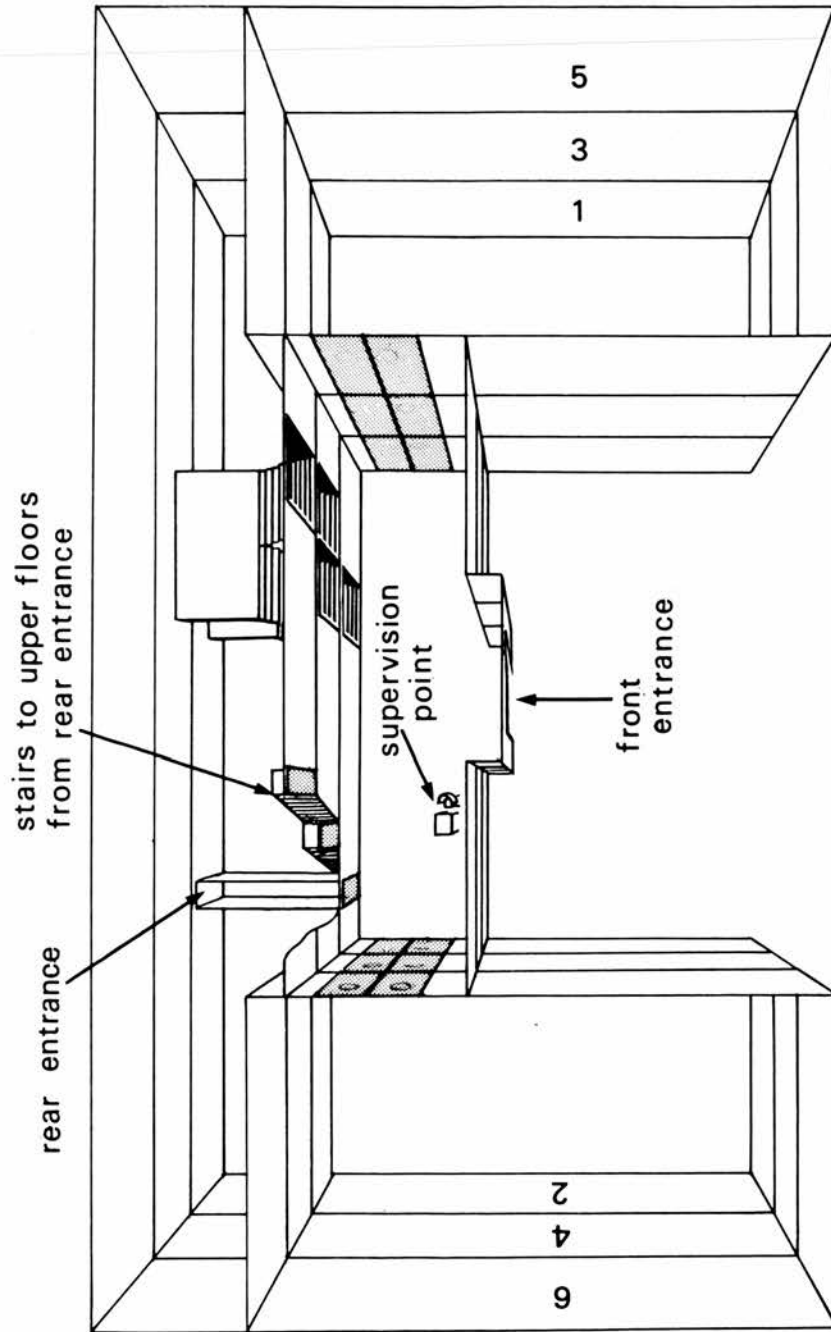


FIGURE 4. THE ROYAL HOSPITAL FOR SICK CHILDREN EDINBURGH:

VERTICAL PERSPECTIVE SHOWING REAR ACCESS TO UPPER FLOORS IN

RELATION TO GROUND FLOOR SUPERVISION POINT

gave visitors access to the upper two floors from the rear entrance to the hospital. Any visitors entering and leaving this way could do so without entering the ground floor corridor where a supervision point covering the medical wards would have to be placed. One suggested way around this problem was to close the rear entrance to the hospital for the duration of the study and to direct all visitors via the main front stairs so that they would have to pass a supervision point in the ground floor corridor. However this was not practicable as a supervisor would then have been faced with sorting out which visitors from the upper floors had been to the surgical wards and which to the top floor wards which were not included in the study. In effect the supervisor would be called upon to watch all visitors to the six wards which would be an impossible task. In the circumstances it was decided to leave out the surgical wards and to provide continuous supervision on the ground floor covering the two medical wards only. It was recognised that this decision would change the character of the sample so that the results of the study might not be applicable to the patients in the hospital as a whole. An examination of the ward admission books showed that the population of the medical wards was representative of the total hospital population in respect of the catchment area served by the hospital. In this essential respect the new sample would still provide relevant information to study the effects of distance on visiting and would provide sufficient data if the recording period were lengthened beyond the four months originally envisaged.

With this decision to limit the study only to the medical wards twenty-four supervisors were obtained from The National Association for the Welfare of Children in Hospital, The Women's Royal Voluntary Society and the Members' Council of the Scottish Association of Youth Clubs. A rota system was devised for the main study to provide for continuous daily supervision by the voluntary workers and the author between 10.30 a.m. and 8 p.m. which were the times of maximum visiting frequency. The supervisors' duties were carefully worked out, their principal task being to identify those visitors who came from the ground-floor medical wards without a card and to get them to complete one before they left the hospital. To prepare the supervisors for the main study each was given a comprehensive set of notes covering the aims and methods of the study, a ground floor plan of the hospital, a list of their duties, an account of hospital routines that would affect their work and finally some cautions about discussing hospital visiting in detail with visitors (Appendix G). All of the supervisors came to the hospital before the main study commenced so that they were able to see the setting for the study and to discuss the problems involved in supervision. Finally, it was arranged that once the main study commenced the author would stay with each new supervisor until they were familiar enough with the duties and problems to handle the work themselves. The way this system operated will be described in the next section.

Summary: A short pilot study was mounted in one ward to test the administration and the instruments designed for the study. As a result several alterations and improvements were made to both the questionnaire and the visiting card. The need for someone to supervise the completion of visiting cards was recognised and this caused the study to be limited to the medical wards only. Attention was given to the defining of supervisors' duties and to organising a rota for daily supervision.

3) The main study

The main study began in October 1967 and ran until the end of February 1968. It was suspended for two weeks over the Christmas and New Year periods because it was the hospital's policy to discharge patients wherever possible in time for these holidays whilst parents and relatives made special efforts to visit children who remained in hospital. Thus for data-collection this holiday period was considered an atypical time and the effective length of the main study was fifteen weeks. It began in the two ground floor medical wards but in November 1967 a third medical ward, Ward 5, was included. The study was carried out the same way in each ward except that the top floor position of Ward 5 (Figure 3) raised special problems in connection with the supervision of data collection. The following description refers to all three wards. Where the methods employed in Ward 5 diverged from those used in the ground floor wards they will be

described separately. The description will be followed by a critical appraisal of the methods of the study.

About a week before the main study began a letter was issued to all grades of hospital staff explaining briefly its aims and how it would be carried out (Appendix H and Appendix H₁ for Ward 5). On the day before the study began meetings were held with the ward sisters and staff nurses to ensure that they fully understood the various duties that they and their staff would be handling and a printed sheet was issued to each member of the nursing staff outlining their duties (Appendices I and I₁). On the morning of the first day of the study notices were placed at the entrances to the wards asking visitors for their assistance (Figure 5). Introductory letters requesting the cooperation of visitors were placed in a prominent position at the entrance to the ward. A notice designed in bright colours to attract the eye asked visitors to take one of these letters (Figure 6 and Appendix J). A supply of similar letters each with a specimen copy of a visiting card attached were given to the nursing sisters for issue to the parents of children admitted to the wards who would be included in the study (Appendix K). Finally the comprehensive set of notes described in the pilot study was issued to each supervisor about two weeks before the study commenced.

The collection of data proceeded as planned. Holders with visiting cards were provided for each patient (Figure 7). When leaving the hospital visitors dropped completed cards in the box at the ground floor supervision point (Figure 8). A separate box

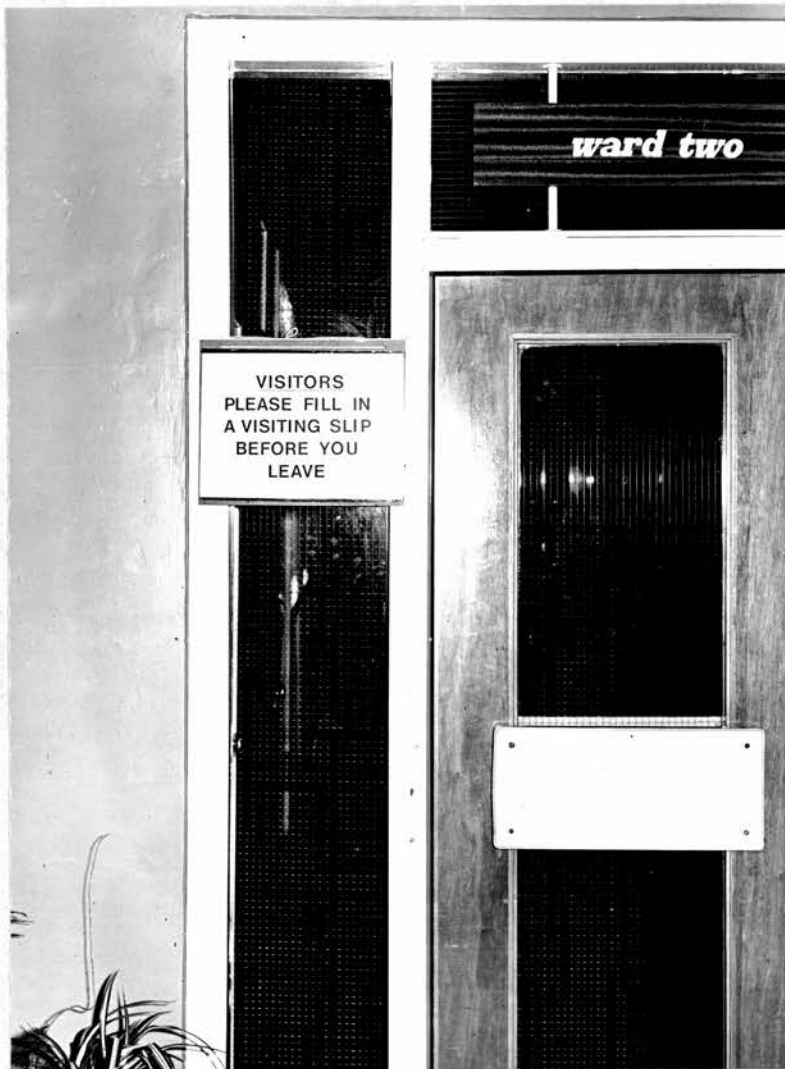


Figure 5. Notice at the entrance to the ward asking for visitors' cooperation.

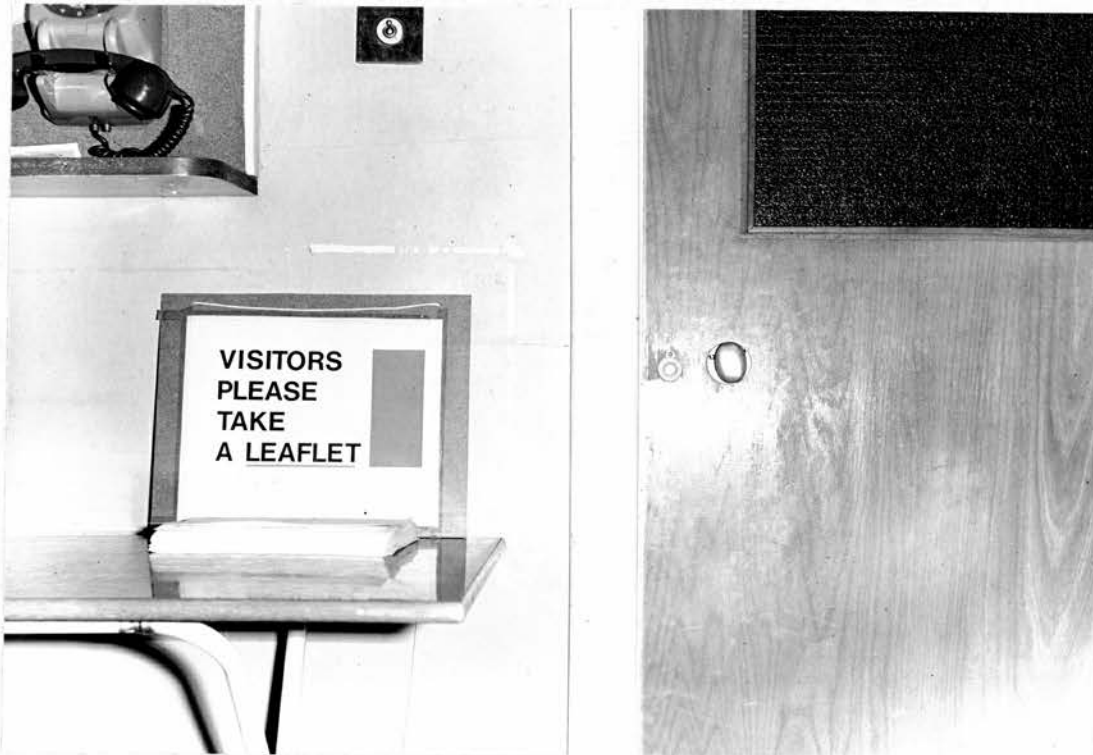


Figure 6. Explanatory letters made available to visitors at the entrance to a ward.



Figure 7. A holder with visiting cards displayed in a prominent position above a patient's bed.



Figure 8. The view a visitor would have when leaving Ward 2 showing the ground floor supervision point in relation to the exit from Ward 1 and the main exit from the hospital.

for use by visitors to Ward 5 was placed at the exit to that ward. When a patient was discharged a questionnaire and covering letter in a stamped addressed envelope were given to the parents by the senior member of the nursing staff on duty at the time. Where a questionnaire was not returned within two weeks a reminder letter was sent. (Appendix L) If, after a further two weeks, the questionnaire was still not returned a second one was issued with another covering letter.

To maintain the study certain routine administrative procedures were carried out each day which can best be described by detailing the activities of a 24 hour period beginning around 7 p.m. At this time the nursing staff provided the author with the names of any patients admitted to or discharged from their ward on that day. This information was entered in the central register which was organised on a ward basis. A specimen page of the register is given in Appendix M. Working from the register a visiting summary card was prepared for each patient in the sample. These cards were used for summarising the information from all the visiting cards left on that day in respect of a particular patient. (Appendix N) The boxes containing the days visiting cards were then emptied. The cards were sorted into piles for each patient, clipped to their appropriate summary card and filed by ward overnight. In preparation for the next day's recording six visiting cards per patient were marked with the patient's code number for issue to the holders the

following morning. Finally, questionnaires were prepared for issue in those cases where a patient had spent one full day in hospital, excluding the day of admission, and thus qualified for inclusion in the sample. The questionnaires were placed in index files in each ward sister's office. These evening administrative duties were carried out at the ground floor supervision point between 7 and 8 p.m.

Supervision from the ground floor position ceased at 8 p.m. The night nursing staff came on duty then and took over supervision until 8 a.m. next day. During this time the night staff completed visiting cards for all visitors as a check on cards filled in by the visitors themselves. They also emptied the two boxes at midnight so that any cards from late visitors would not be confused with cards from visitors the following day.

Next morning between 9 a.m. and 10.30 a.m. the author made sure that the data-collection system was organised correctly for the new day. The ward registers were brought up to date with details of any late admissions from the previous day. Holders were provided for any patients admitted the previous day and for whom the current day would be the first recording day. All holders were checked and stocks of visiting cards provided where necessary. It was also part of the morning routine to work through the visiting records of the previous day. The information contained on the visiting cards was summarised onto each patient's daily summary card. At this stage any obvious errors on a card such as the omission of a patient's name or time of a visit were

noted and immediately taken up with the nursing staff and corrected if possible. The final morning routine was to visit the wards and check with the senior nursing staff whether there had been any visitors between 8 a.m., the time when the night staff went off duty, and 10.30 a.m., the time when the voluntary supervisors came on duty. At 10.30 a.m. supervision of the data collection in Wards 1 and 2 was transferred from the wards to the corridor point. Subsequently throughout the day, the nursing staff handled the administration of the study in the wards whilst the voluntary supervisors carried out their own duties. Meanwhile, the visiting records from the previous day were returned to the Department of Social Medicine for independent checking of the information on the patient's daily summary cards. A summary of these various morning and evening routines is given in Appendix O.

At the end of November Ward 5 was brought into the study in an attempt to increase the number of cases whose homes were in distance zones 2 and 3. To achieve this only patients who came from these zones were to be included, no records being kept for Edinburgh patients. For a number of reasons this seemed to be a reasonable way of overcoming the problem of the imbalance of Edinburgh and regional cases which would otherwise accumulate during the study. In particular, by bringing in Ward 5 at this stage it would not then be necessary to collect information about patients from zones 2 and 3 after the main study had finished. Thus, not only would time be saved but the patients included in the

sample would also all have received their visiting during the same time-period.

The principal difficulty involving Ward 5 concerned the supervision of the visiting record. The problems about the maintenance of voluntary supervision on the upper floors of the hospital which were discussed in the pilot study still applied but as only a few patients in the ward would be within the sample at any one time the nursing staff felt they would be able to undertake the supervision. It was arranged that each morning the author would put in the ward sister's office a sheet giving the names of the relevant patients. After consulting with nurses on duty the senior nurse would enter against each patient the identity of any visitors who had been to the ward during their period of duty. The list would be completed twice daily at the change of nursing shifts at 2 p.m. and 8 p.m. This information could also serve as a check against the cards left in the box by visitors. As an additional check on the accuracy of the Ward 5 records two student nurses were asked each morning to recall who had visited the selected patients on the previous day. This information was then compared with the list compiled by the senior nurses and the visiting cards from the box. The study was thus extended to Ward 5 with the greater involvement of the nursing staff in supervision duties, but apart from this major difference the way in which the study functioned in the three wards was identical.

At the end of a patient's stay the information from all of his daily summary cards was condensed onto a mastercard. This

showed the total of visiting received from different visitors by days, evenings, day of the week and day of patient stay (Appendices P and P₁). The mastercard and the completed questionnaire were the two records of information for each patient from which the subsequent data analysis could be made. Where no questionnaire was returned some of the basic social data was obtained from the patient's hospital case notes with the help of the hospital records officer.

4) Critical discussion of the study Methods

This section will deal only with the main study as the problems encountered at the pilot stage have been discussed earlier (pages 96 - 108). The broad strategy of the study will be treated first and then detailed comment will be made particularly about the data collection methods.

A major limitation of the study was its restriction to medical wards. Thus any findings are only applicable to medical patients and one must be cautious about generalising to patients in other divisions of the hospital. For example, visits to surgical patients might be affected by the timing of operations whilst the known emotional reactions of parents to severe burns in their children might be expected to affect patterns of visiting in such cases. Whilst recognising this limitation however, there were also merits in restricting the study to medical wards, particularly within the context of limited available resources. The continuous supervision which was possible probably contributed

to a more efficient recording system and the high response rate which was achieved in the completion of visiting cards. (In the event there was not a single case of open refusal to complete a card by a member of the public throughout the study). The restriction of the study seems also to have been justified by the fact that the population of the medical wards was drawn from both the local and regional catchment areas and hence was adequate for the central purpose of the study, that of exploring the effects of distance on the community's use of a centralised hospital.

More specific criticisms can be made in relation to the methods used for data collection. There were various ways in which errors could have occurred in the visiting record. For example visitors might have made incomplete or inaccurate entries on the card. Where gross errors occurred, such as the failure to complete a section, they were invariably uncovered during the evening sorting or the morning processing of the cards. They could then be corrected by checking with the staff or the visitor concerned at a subsequent visit. There was no way however of checking that every visitor entered details of relationship to the patient and times of visiting accurately. The only possible assumption to make throughout the study was that the information would be correct.

Defects in supervision may have been a more serious source of inaccuracy in the visiting record. The principal function of the supervisors was to bring into the study the estimated 10% to 20% of visitors who left the wards without a card. However, it

was not always possible to notice everyone leaving Wards 1 and 2 as there were occasions during the week when there were so many people in the corridor - arriving for and leaving after lectures, gathering at the office to collect wages and so on - that supervision became difficult. Apart from these specific situations when visitors may have been indistinguishable in the crowd it is possible that the level of efficiency of supervisors may have varied. This was something upon which no check was made and consequently no assurance can be given that errors did not accumulate because of supervisor inefficiency. There are a number of reasons however for assuming that this was not a source of large error. Thus the supervisors all came from large and responsible voluntary bodies and they were given careful preparation and introduced to the study gradually. The author supervised jointly with each supervisor on their first day, jointly supervised half of each supervisor's second session and discussed with them any problems arising and only allowed the supervisor to supervise independently in the third week of the main study. Also, it was usually easy to intercept visitors because with the open visiting policy at the hospital there was no rush of visitors at any one time. The position of the supervision point close to and between the two exits from the corridor also aided the supervisors in their duties.

In Ward 5 the supervision system could not be so strict as it was in the hands of the nursing staff who were often very busy with other duties. Here the nurses could not be asked to check

times of visits as this would have involved them in assessing whether visitors, when leaving the ward, had finished a visit or were temporarily leaving for some other purpose - in short they would have been asked to carry out full supervision duties. Thus the supervision and checking systems in Ward 5 were directed only to the task of identifying the relationship of visitors to the selected patients. But even in doing this the nurses could make mistakes. This became evident early on when some of the nurses' identifications failed to match the information provided by visitors on their cards. The nurses had little difficulty in recognising mothers and fathers as they usually accompanied the child at admission and were the most frequent visitors, but it was not so easy for them to make distinctions between the various relatives and friends who also made visits. As a check on this possible source of error from mis-identification by the senior nurses, each morning two student nurses were asked to recall who had visited each patient on the previous day. Where the senior and student nurses assessments did not correspond they were carefully discussed. Where discrepancies persisted as a last resort the next visitors to the patient were asked to help with the problem. Despite these strategies the possibility remains that a small error exists as a result of the mis-identification of visitors outside the nuclear family in Ward 5. Such an error is unlikely to be large however as sole reliance on nurses' identifications only applied in those cases where visitors did not complete visiting cards.

It is difficult to estimate the extent of the errors in the visiting record from these various sources. However, it is unlikely that the final record is so inaccurate as to invalidate the study findings.

The questionnaire response rate was high. 90% of those issued were eventually returned. The 10% of non-returns were not pursued after the issue of a second questionnaire mainly because of the expense and time that would have been involved for a marginal increase in the returns from each distance zone. (Table 8 Appendix Q) The information provided by the questionnaire was largely satisfactory. However it was not always clear whether respondents' replies about the number of children in the family included or excluded the patient and all replies to this question had subsequently to be checked against the patients' hospital case notes. The answers to the final motivational question showed little variation and it must be doubted whether information of this kind can be pursued in such a superficial way. Finally a small proportion of respondents occasionally failed to answer certain questions or sub-sections of questions. However in the large majority of cases these omissions did not affect the social and access data of principal interest in the study.

On balance both aspects of the data collection system worked well and it is likely that they provided fairly full records of information for the subsequent analysis.

CHAPTER 6

RESULTS OF THE EDINBURGH SURVEY

Introduction

In this chapter the results of the survey of family visiting at the Royal Hospital for Sick Children in Edinburgh will be presented in three sections. A description of the main characteristics of the patient sample and of their social background will be given first. This will be followed by an analysis of the patterns of visiting made to the patients and a final section will deal with the methods of transport used by visitors when making visits to the hospital. Throughout the results, the principal comparisons will be made on the basis of the three distance zones used in the study.

The majority of the detailed results will be found in Appendices Q, R and S, to which reference should be made as appropriate. Illustrations and occasional summary tables have been introduced into the text in order to illustrate some of the major findings of the study.

1) The sample and its characteristics.

1) Basic details

The composition of the sample by distance zones: 502 cases were eventually included in the study, of which 43 per cent came from distance zone 1, 24 per cent from zone 2 and 33 per cent from zone 3. By comparison the proportion of total discharges from

the hospital for the three year period 1964-6 was 55 per cent from zone 1, 22 per cent from zone 2 and 23 per cent from zone 3. For the same period the corresponding figures from the Medical Paediatric division were 53 per cent, 21 per cent and 26 per cent. It appears that the inclusion in the study of non-Edinburgh cases in Ward 5 served to increase the proportion of cases from zone 3 and to a lesser extent zone 2 and relatively to decrease the weight of cases from zone 1. (Table 1 Appendix Q).

Sex: The proportion of male cases exceeded the female in the sample in the ratio 58 per cent to 42 per cent. This preponderance of males was evident in each distance zone. (Table 2 Appendix Q) For 1968, the ratio of male to female discharges in the hospital as a whole was 60 per cent to 40 per cent and for Medical Paediatric discharges 57 per cent to 43 per cent.

Admission Status: The majority of the patients were first admissions (83 per cent). Altogether 93 per cent were admitted only once during the course of the study whilst approximately 6 per cent had more than one admission. (Table 3 Appendix Q)

Admission Procedure: 80 per cent of the admissions were classed as emergencies whilst only 15 per cent of the sample were admitted via the waiting list. (Table 4 Appendix Q).

Age-distribution: Of the 502 cases just under a third were over 5 years of age and approximately two thirds were less than 5. One third of the sample were under one year and about $\frac{1}{4}$ were babies under six months. (Table 5 Appendix Q) In 1968 just under a half (48 per cent) of discharges from the hospital as a whole were over 5; about one sixth were under a year. From Medical Paediatrics the corresponding proportions were both just under one third (31 per cent and 28 per cent respectively).

Length of stay: The mean length of stay was 6.5 days with little variation between the distance zones. The comparable figure for all discharges from the Medical Paediatric division of the hospital, for 1965, was 11 days. The shorter length of stay in the sample is partly to be accounted for by the fact that a limit of 21 days of stay was fixed for which records would be kept for any patient. (Table 6 Appendix Q)

Day of Admission: The pattern of admissions by day of the week was consistent for all three distance zones. Most admissions took place at the beginning and at the end of the working week. (Mondays, Tuesdays, Thursdays and Fridays). A smaller proportion of admissions took place on Wednesdays and at weekends. (Table 7 Appendix Q) To a large extent these patterns reflect the inclusion of Ward 5 in the study. Of the 3 wards, Ward 5 contributed the smallest proportion of patients to the sample and

its routine waiting days* were Wednesday, Saturday and every third Sunday.

ii) Social characteristics

Most of the social data about patients' families was provided by the returned questionnaires. In cases where a questionnaire was not returned the case records kept for each patient at the hospital provided data about the patient's age and address, number and ages of other children in the family, father's occupation and mother's occupation, if she was in employment.

Questionnaire returns: Questionnaires were issued to parents of patients who stayed for one or more than one complete day in hospital other than the day of admission or discharge. They were not issued in the cases of readmissions, where a brother or sister of a patient was admitted or where a patient died during the hospital stay. 438 questionnaires were issued and eventually 394 were returned giving a response rate of 90.0 per cent. (Table 8 Appendix Q).

Family Status: The great majority (94 per cent) of families were classified as normal (see page 132). A small number of patients came from Children's Homes (2 per cent) and of these most came from zone 1. (Table 9 Appendix Q).

* A waiting day for any particular ward was one on which that ward would accept all, or as many as possible, of the emergency admissions.

Family Type: Just under 1/5 of the sample were only children in the families concerned. Approximately 50 per cent of the sample were from families where there was at least one other child under the age of 5. (Table 10 Appendix Q)

Social Class: The Registrar General's Occupational Classification was used as the basis for the coding of social class. Coding was based on the father's occupation or, in the case where a father was unemployed, on his last occupation. In the absence of a father, coding was based on the mother's occupation. Splitting the sample into the three groups of social classes I and II, III and IV and V the respective proportions of the sample were 18.5 per cent, 47.5 per cent and 34 per cent. (Tables 11 and 11a Appendix Q). The comparable figures from the 1961 Census for East Central Scotland and the Border Counties combined were 16 per cent, 51 per cent and 33 per cent.

Father's place of work: Information about father's place of work was not given in about 20 per cent of the questionnaire returns. Where it was available approximately a half of the fathers resident in zones 1 and 2 worked in Edinburgh. Just under 75 per cent of fathers from zone 3 worked outside the city. Altogether about 33 per cent of the fathers included in the sample worked in Edinburgh. (Table 12 Appendix Q)

Work Status of Mother: The proportion of mothers who were in some form of paid employment was small amounting to about 12% of the whole sample. Most of these were employed part time. From the information available just over two thirds of the mothers were not in paid employment but mother's employment status was not known in about 1/5 of the cases. (Table 13 Appendix Q)

2) The Analysis of Visiting

The principal object of this study was to examine the relationship between inpatient visiting and distance and the results presented in this section all have this particular focus. Other relevant analyses have also been made, for example of the association between visiting and such social variables as family size but whilst some reference will be made to these aspects in the discussions below the main concentration will be upon the association between visiting and distance.

1) Categories of visitors included in the analysis

In order to examine this relationship the visiting records for certain individual visitors and groups of visitors were analysed separately. A preliminary assessment of the visiting data (see page 133) showed that it would not be necessary to do this for all of the visitors for whom data was collected in the study. The visitors that were selected are listed below together with the reasons for choosing them.

Mothers: Mothers' records were analysed separately because they were the most frequent visitors and because of the recognised importance of the mother-child relationship.

Fathers: Fathers were the second most frequent visitors. They were also analysed as a separate group because there is increasing evidence that in family life fathers play an important part in the upbringing of their children and that the nature of the father-child relationship is important to the development of the child's personality (Newson, 1963; Andry, 1962).

Both Parents: In normal daily life a child would usually have contact with both parents. An assessment of how far the child-parent contact in hospital approached this daily normal was made by analysing the amount of daily visiting by both parents.

Either Parent: Analysing the records of each parent separately or of both parents together would not necessarily indicate the number of occasions when a patient had at least some parental contact. Thus, visiting a child in hospital might often be a shared parental duty leading to an arrangement where at least one parent visited each day. A convenient way of measuring the total amount of parental support given to each patient was thus to analyse the number of days when he received visiting by either mother or father.

Nuclear Family: A separate analysis was made to show the sum of visiting by the patients' immediate families (parents and siblings) so as to include the contribution of elder brothers and sisters.* No separate analysis was made for brothers and sisters as few actually did visit.

Anyone: A final analysis was made of whether on any day each patient was visited by anyone at all. This included visits by friends and relatives outside the immediate family as well as by all of the groups listed above. This analysis was made because it was felt that any contact with familiar people was likely to be of help to the child.

ii) Definition of terms

In the analysis of visiting a number of terms will be commonly used. They are defined as follows.

Length of stay: This is the number of days on which a patient was in hospital excluding his admission and discharge days.

Visiting opportunity: This was defined as a day (24 hour period) during which it was possible for a patient to be visited. An evening visiting opportunity was also recognised which was defined as an evening (6 p.m. - 12 p.m.) during which it was possible for

* Children under the age of 12 were not allowed to enter the wards as visitors.

a patient to be visited. Evening visits were credited where a visitor was present in the ward after 6 p.m. irrespective of whether they actually arrived to visit before or after that time. It will be apparent that for each patient his length of stay and the number of visiting opportunities during which he was exposed to visiting were the same.

Percentage of visiting opportunities used: The basic procedure adopted to assess the amount of visiting made by a group of visitors (e.g. mothers) was to relate the total number of days upon which visits were made to the total number of days of patient exposure to visiting: e.g. for Mothers:-

$$\frac{\text{Total number of days on which Mothers visited}}{\text{Total number of days of patient-exposure}} \times 100$$

= Percentage of visiting opportunities used by mothers.

The numerator was arrived at by summing the number of days each patient received visits by his mother. The denominator represents the summation of the individual patients' lengths of stay.

It will be apparent that this procedure is fairly crude as it gives the same weight to a visitor making one visit as it does to another visitor making more than one visit on any day. At this stage of the analysis however it appeared more satisfactory to present general visiting comparisons rather than become involved in the complexities of multiple-daily visiting which could be pursued later as time permitted.

Patient populations: The various analyses that were made were not all based on the same populations. The usual group of patients for whom visiting was analysed were those coming from normal families who were also first admissions (i.e. who came from families where both a mother and father were alive and living together and where the patient was admitted to this hospital without having been admitted in the previous eight months). Readmissions were omitted from all analyses as to have included them would have led to double counting for this particular group of patients. In the analysis of evening visiting Ward 5 patients were excluded because actual times of visiting to patients in this ward were not kept. The actual population is specified in relation to each analysis.

iii) The main aspects of visiting that were examined

The visiting data was analysed in the following three ways to show different aspects of the relationship between visiting and distance.

a) The patterns of visiting were examined in the most general way by looking at the total amount of visiting made by each of the main categories of visitor. For example, the total amount of visiting by all mothers in zone 1 was compared with the sum of mothers' visiting in zone 2 and so on. This is a crude measure as in any zone it pools the visiting experience of all mothers and makes no allowance for the fact that some mothers will visit frequently and others hardly at all. Nevertheless it is a useful procedure in

that it allows an analysis with large numbers of visitors from each zone. These can then be broken down to examine important sub-groups such as social classes, without getting into difficulties with small numbers.

b) The data was then analysed in a more refined way to focus on the variable amounts of visiting that took place within each distance zone by each visitor. For example, mothers were classed as making high, medium or low levels of visiting and in this respect comparisons made between mothers from the different distance zones. The precision that is gained in this analysis over the more general one discussed above is offset by the fact that in any zone the whole sample is split into 3 subgroups on the basis of visiting levels. This quickly produces small numbers in the subgroups which precludes a more detailed analysis in relation to such interesting points as social class differences.

c) The final section of the visiting analysis concerns the way in which visiting varied throughout the length of time that patients were in hospital. In particular it examines the nature of the relationships between time-trends of visiting and distance. These three aspects of visiting are discussed in turn.

a) Distance and the overall use of visiting opportunities by different visitors

Table 2 shows the use made of the total of visiting opportunities by different visitors. Mothers were the most important single visitors followed by fathers, whilst between them

Table 2

Use of available visiting opportunities by different visitors.

Days available 2,924	Mother	Father	Both Parents	Either Parent	Brother	Sister	Nuclear Family	Other Rela- tive	Friend	Anyone
Days used	1754	1272	1088	1939	31	86	1945	627	203	2014
Percentage of available days used	60.0	43.5	37.2	66.3	-	-	66.5	21.4	6.9	68.9

mothers and fathers (either parent) visited on a high proportion of the days (66 per cent). Visits by all other visitors were limited and for this reason only parents' visiting will subsequently be referred to in detail.

The total amount of visiting from each distance zone is summarised in Figure 9. For each category of visitor the proportion of days used was roughly similar in zones 1 and 2 but substantially lower in zone 3. Some interesting points emerge when weekend and weekday visiting is compared. (Figure 9B and 9C) The proportion of weekend days (Saturdays and Sundays) used is higher than the proportion of weekdays used for each visitor category and this pattern applies to all distance zones. This raised weekend visiting probably reflects the fact of greater family flexibility resulting from the more frequent presence of both parents at home at this time than during the week. The size of the difference shows an interesting relationship to distance increasing from a small amount in zone 1 to a considerable level in zone 3 (Table 3). Thus Edinburgh mothers use only a slightly greater proportion (2 per cent) of weekend days than weekdays but in the case of mothers from zone 3 the difference is almost a quarter (24 per cent). This suggests that the relative importance of weekends for visiting is greater to families living further away from hospital. Presumably local families living relatively close to the hospital (within 5 miles) are able to visit more or less equally well at weekends or during the week, access to the hospital being reasonably convenient. However, for

FIGURE 9

PERCENTAGE OF AVAILABLE DAYS USED BY MAIN VISITORS
BY DISTANCE ZONE

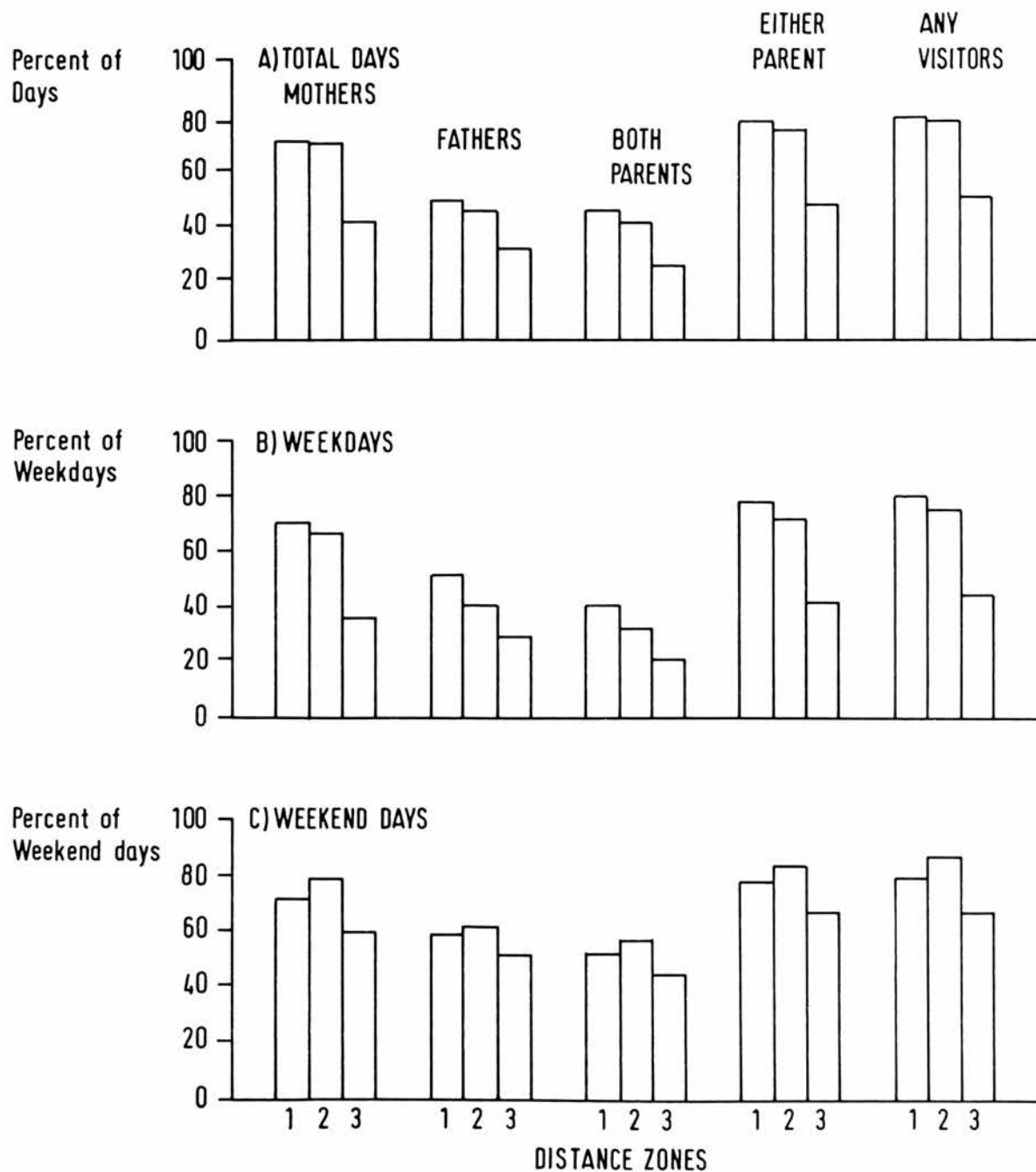


Table 3

Percentage difference between weekend day and weekday visiting by principal visitors from each distance zone (for full details see Table 1 Appendix R)

Distance Zone	Mother	Father	Both Parents	Either Parent	Anyone
1	+ 1.9	+ 7.3	+ 9.1	0	+ 0.7
2	+12.8	+21.6	+23.1	+11.4	+12.9
3	+23.6	+26.4	+24.4	+25.7	+23.7

families living further away it may be that it is relatively more convenient at weekends when, with both parents at home the family can find more free time in which to visit. This theme of convenience of access is taken up in more detail later.

It is instructive to compare the actual amounts of visiting which lie behind these patterns. (Full details are given in Table 1 Appendix R). As a group children from zones 1 and 2 generally receive parental visits on a high proportion of both weekdays and weekend days (either parent visits on at least 70 per cent of the occasions from both zones). However, patients from zone 3 are visited on a relatively low proportion of weekdays (mothers use 35 per cent, either parent uses 40 per cent), and even though weekend use is markedly higher (mothers use 58 per cent, either parent 66 per cent of weekend days) this group still receives the lowest visiting at both times.

So far the patient populations from each distance zone have

been treated as uniform groups. It was anticipated however that there might be variations in visiting related to social class and that any such differences might also show associations with distance. Accordingly, the above analysis was repeated with the population broken down into middle and working-class groups.

Table 4 compares the use made of the total of visiting opportunities by the main visitors in the two social classes. The central point emerging is that proportionately, visiting by the middle class is considerably greater than by the working class for all visitors.

Table 4

Visiting days used by principal visitors by grouped social class.

Social Class	Days available		Mothers	Fathers	Both Parents	Either Parent	Anyone
I/II/ IIINM	656	Days used	520	428	398	550	559
		% used	79.3	65.2	60.7	83.8	85.2
IIIM/ IV/V	2,139	Days used	1153	797	647	1304	1366
		% used	53.9	37.3	30.2	61.0	63.9

The relationship between visiting by social class and distance is summarised in Figure 10. The variations in these visiting patterns are considerable and are worth detailed comment. (For full details see Table 2 Appendix R).

It will be seen that the greater visiting by the middle class is a feature common to all categories of visitor in all three distance zones. A second point is that within each social class the amount of visiting by mothers and either parent in zones 1 and 2 is approximately the same but that visiting from zone 3 is always much lower. In contrast, visiting by fathers (and hence by both parents) shows a more regular fall off with distance. This is common to each social class and leads again to the lowest visiting from zone 3 with the smallest amount of visiting altogether coming from the working class in this zone. (Fathers visit on only 25 per cent and both parents on only 19 per cent of the available days. Comparative figures for zone 1 are 46 per cent and 37 per cent respectively). Comparison of Figures 10B and 10C emphasises the differences in visiting during weekdays and at weekends which are summarised in Table 5. Apart from the anomalous patterns for middle class fathers and both parents the main trend is consistent. With increasing distance a proportionately greater use is made of weekends than weekdays and the strongest weekend effect is seen in the case of working class visitors from zone 3. The appropriate levels of statistical significance are indicated in Table 5.

Finally it is worth examining what these variations in visiting patterns mean in terms of actual visiting to different groups of patients. Local middle class children (zone 1) are visited on a very high proportion of weekdays by mothers (approx. 90 per cent) and by either parent (over 90 per cent). Similar visiting occurs at weekends. These extremely high figures are

Table 5

Percentage difference between weekend days and weekday visiting by main visitors, by social class and distance zone.

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Distance Zone	Mother		Father		Both parents		Either parent		Anyone	
	Middle class	Working class	Middle class	Working class	Middle class	Working class	Middle class	Working class	Middle class	Working class
1	2.3	1.6	8.1	7.3	10.8	8.8*	-0.4	0	-0.4	1
2	12.2	12.3**	38.4**	16.4**	40.2*	17.5*	10.4	11.2*	10.4	14.1**
3	17.4*	26.2**	19.8*	29.6**	20.9**	26.8**	16.4*	29.1**	10.9	28.1**

* P = < .05

** P = < .01

also reflected in the fathers' visiting, local middle class fathers visiting on over $2/3$ of the possible days (71 per cent). From zone 2 the middle class weekday patterns are similar but visiting is even higher at weekends. (100 per cent by either parent). In zone 3 middle class figures drop to 56 per cent for mothers and 64 per cent for either parent with corresponding weekend figures of 72 per cent and 80 per cent approximately. It is important however to remember that this high middle class visiting takes place to a minority of the patients in the sample who between them account for only 23 per cent of the days of patient exposure to visiting.

Working class Edinburgh children as a group are visited on about 60 per cent of available weekdays by mothers and slightly more by either parent, these figures rising to about 66 per cent at weekends. Similar figures apply during the week from zone 2 rising at the weekends to between 70 per cent and 80 per cent. In zone 3 the use of weekdays drops to only 30 per cent by mothers and to only just above a third of the available days by either parent (34 per cent). Even lower proportions of weekdays are used by fathers (16 per cent) and both parents (11 per cent) for visiting. The strong effect of weekends of this particular group raises proportions at these times to 55 per cent for mothers, 63 per cent for either parent and 46 per cent for fathers. Despite this however, the use of available days by working class parents from zone 3 when compared with zones 1 and 2 is remarkably low and is especially so during the week.

There is widespread agreement that it is the young child under five years of age who is most in need of parental support whilst in hospital (Haller, 1967; Wolff, 1969; The Welfare of Children in Hospital, 1959) and a separate analysis was made to compare the amount of visiting made to patients under and over five. Newborn babies (aged 14 days or less) were excluded from this analysis on the assumption that their mothers would be relatively immobile in the first few days after delivery and therefore unable to visit. Babies between 15 days and six months however were included in view of the importance of constant mother and baby contact at this stage to the development of an emotionally secure mother-child relationship.

Table 6 compares the overall use of visiting days by different categories of visitor and shows that the under 5's receive considerably less visiting than the over 5's.

Table 6

Visiting days used by principal visitors to patients under and over 5 years of age.

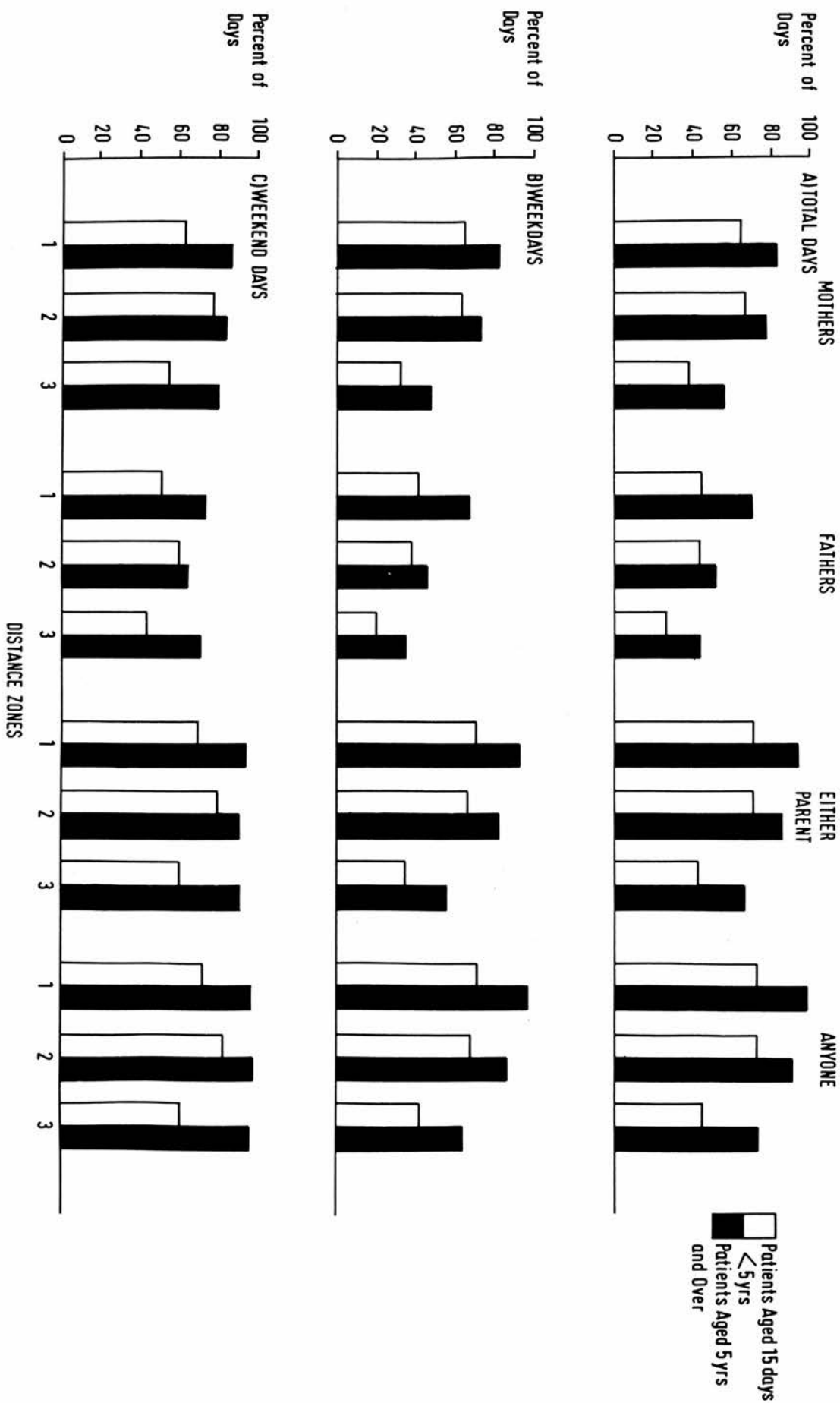
Patient's Age group	Days available		Mothers	Fathers	Both parents	Either parent	Any age
<5	1849	Days used	1007	685	599	1094	1125
		% used	54.5	37.0	32.4	59.2	60.8
≥5	915	Days used	680	523	444	759	803
		% used	74.3	57.2	48.5	83.0	87.8

The relationship between distance and visiting to patients in the two age-groups is summarised in Figure 11. Full details of these variations in visiting are given in Table 3 Appendix R.

Figure 11 shows that irrespective of time of week or category of visitor visiting to the under 5's is lower than to the over 5's in each distance zone. No consistent relationships between distance and visiting to either age group is evident at weekends although the lowest visiting is always seen in relation to under 5 patients from zone 3. During the week however, marked relationships to distance are seen especially in the visiting to the older patients. Here the fall off in visiting with distance is consistent for all visitors. Weekday visiting to the under 5's is almost identical from zones 1 and 2 but markedly lower from zone 3.

The striking figures to note from these variations concern principally the weekday visiting to children in this younger age group. Thus, as a group these children receive less than two thirds of visits from their mothers on the available days if they live in zones 1 or 2 (64 per cent, 62 per cent) and on less than one third of the days from zone 3 (31 per cent). Little difference is evident when visiting by either parent is considered. Visiting by fathers is especially low, falling from 40% in zone 1 to less than 1/5 of the available days from zone 3 (18.6 per cent).

FIGURE 11 PERCENTAGE OF VISITING DAYS USED BY MAIN VISITORS FROM EACH DISTANCE ZONE TO PATIENTS UNDER AND OVER 5 YEARS OF AGE



Summary of main observations

1. Most visiting was by parents with mothers the most frequent visitors.
2. For all visitors the total amount of visiting was roughly the same from zones 1 and 2 but considerably lower from zone 3.
3. Weekend visiting was greater than weekday visiting and the excess of weekend use rose as distance from hospital increased.
4. The middle class visited more than the working class.
5. Both social class groups visit more at weekends than during the week and in both groups the size of the weekend excess rises with distance. The strongest effect of the weekend in raising visiting is seen in the working class from zone 3.
6. In both social class groups visiting from zones 1 and 2 is markedly higher than from zone 3.
7. The group of children receiving the least parental visiting are the working class children from zone 3.
8. As a group, children under 5 years of age receive less visiting than those over 5. This feature is common to each distance zone.

b) The relationship between distance and the levels of visiting by principal visitors

Behind the general patterns of visiting already described it was expected that there would be considerable variations in the amounts of visiting made to individual patients ranging from those who were visited every day to those who were not visited at all.

As such variations might also be strongly related to distance their analysis would be expected to give a more refined picture of family visiting than the generalised description given above.

To examine these variations in amounts of visiting each patient was classified as having received low, medium or high levels of visiting depending upon whether visits were received on $\leq 1/3$, on $\leq 2/3$, or on $> 2/3$ of the days that the patient was in hospital. Only patients who had lengths of stay of three days or more were included in this analysis.

Separate analyses of the data were made in respect of each category of visitor and also for two time-periods. In the first of these the 24 hour day was used as the unit of visiting. In the second, the evening was used and in this case a visit was credited where a visitor was present in the ward after 6 p.m., irrespective of whether they had come before or after that time. The decision to look at evenings separately was seen as being particularly important in the light of the emphasis given to the question of evening visiting in the Platt Report. (The Welfare of Children in Hospital, para. 82, page 21).

"Parents should be encouraged to visit in the evening when they will have an opportunity to help in settling the child for the night.
They/

They may be able to give the child supper and look after his other needs. There are obvious advantages to both the parents and child in letting them spend some time together just before he goes to sleep. Moreover the child's relationship with his father is of the greatest importance and evening visits allow the parent who works to maintain contact with the child without incurring financial loss or jeopardising the efficiency of the home".

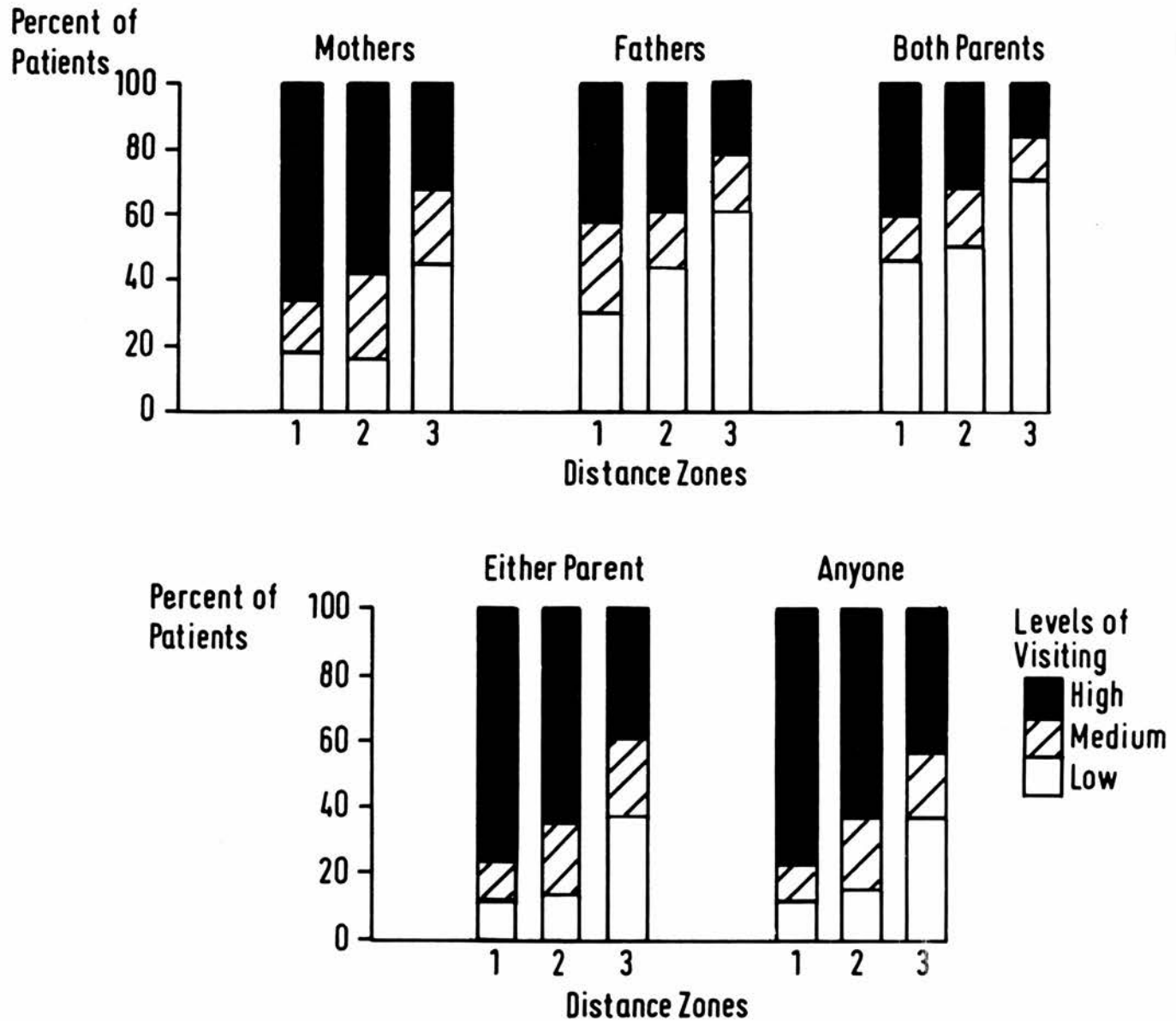
The results using the day as the unit of visiting are presented first and the evenings second.

Levels of daily visiting: Full details of the daily visiting are given in Table 4 Appendix R. The variations in visiting levels by distance zone are summarised in Figure 12, from which two points emerge. First, as distance increases the proportion of patients receiving high levels of visiting declines markedly. This pattern is common for all visitors. Second, the proportion of patients receiving low levels of visiting increases as distance increases. This pattern applies to all visitors except mothers where the trend is not so regular. Taking the main categories of visitor separately the following main points emerge:

The proportion of mothers making high levels of visiting is considerable in zone 1 (67 per cent), but falls to less than a third in zone 3 (32 per cent). Conversely only about 1/5 of mothers (19 per cent) in zone 1 make low levels of visiting which rises to 45 per cent in zone 3.

The important point which arises in connection with fathers is the relatively low proportion who visit at a high level

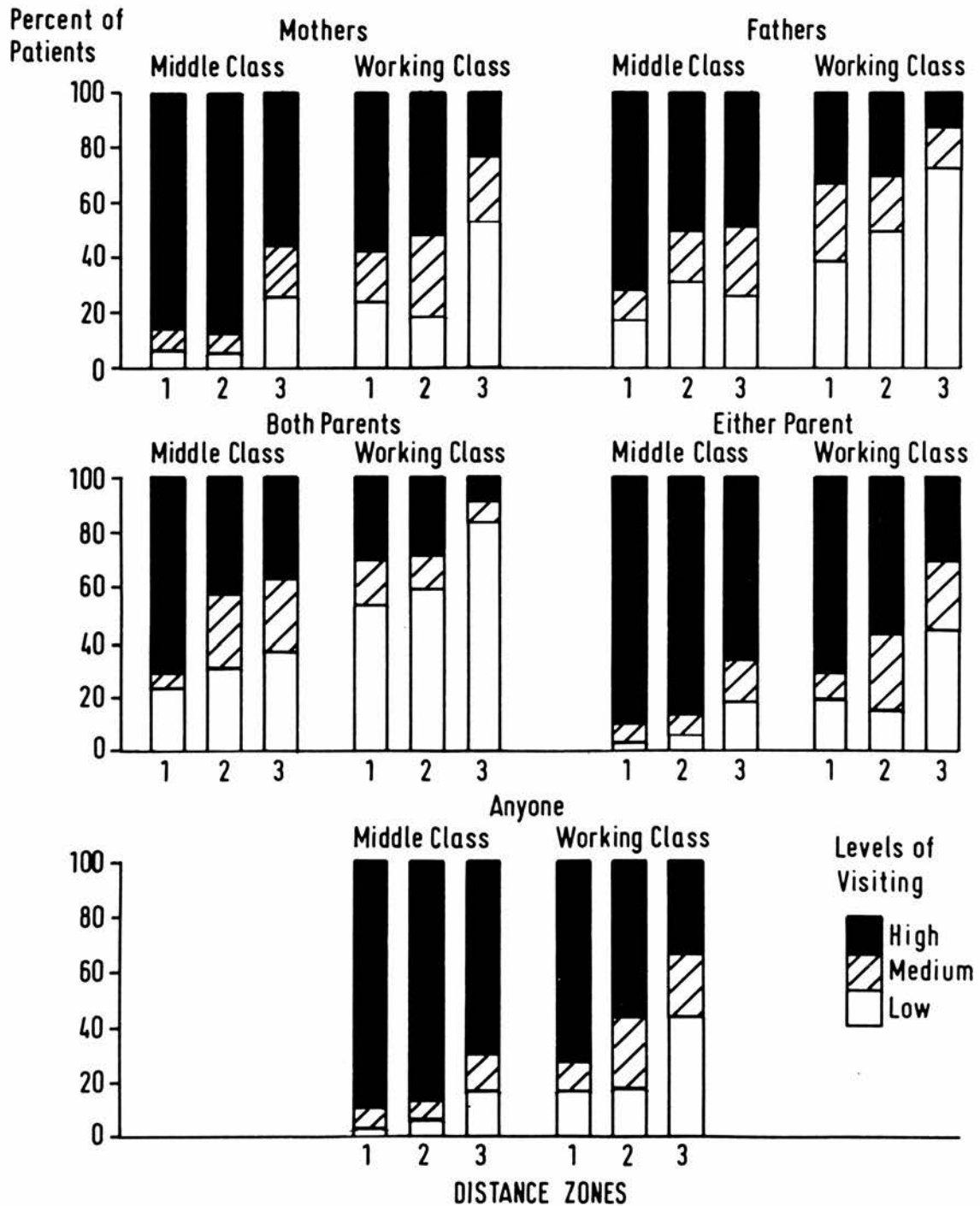
FIGURE 12 **PERCENTAGE OF PATIENTS FROM EACH DISTANCE ZONE WHO RECEIVED LOW, MEDIUM AND HIGH LEVELS OF VISITING FROM DIFFERENT VISITORS**



even locally, (43 per cent in zone 1) a figure which drops even further to only about 1/5 of fathers in zone 3. The corresponding figures for low levels of visiting by fathers rise from a third (33 per cent) in zone 1 to over 60 per cent in zone 3. The contribution of fathers can be further seen in the patterns for visiting by both parents and by either parent. It is interesting to see how few families actually achieve visiting by both parents to any degree. Almost a half (46 per cent) of local children received low levels of visiting by both parents and this figure rose to nearly three-quarters in zone 3 (50 per cent in zone 2, 72 per cent in zone 3). Only two fifths (40 per cent) of local children received high levels of visiting from both parents and this figure declined to less than one-fifth in zone 3 (17 per cent). Finally, looking at the combined efforts of parents to provide daily visiting between them the proportion of children receiving low levels of visiting remains substantial. Thus, whilst only 13 per cent of patients received low levels from either parent in zone 1, almost two-fifths did so from zone 3 (38 per cent). Correspondingly, high levels of parental visiting were made by 78 per cent of families from zone 1 and this fell to about 2/5 in zone 3 (39 per cent).

The general finding described above that middle class visiting is greater than working class, is highlighted in detail in Figure 13. (see also Table 5 Appendix R) The main feature of the middle class patterns is the high proportion of patients who receive high levels of parental visiting and conversely the small number of children

FIGURE 13 PERCENTAGE OF MIDDLE AND WORKING CLASS PATIENTS RECEIVING DIFFERENT LEVELS OF VISITING FROM PRINCIPAL VISITORS BY DISTANCE ZONE



who receive low parental support. In detail about 90 per cent of these children receive high levels from mother, either parent or anyone in zones 1 and 2 and whilst it is less in zone 3, two-thirds (67 per cent) still receive high levels of parental support. The proportion of working class children receiving high levels of visiting declines sharply with distance and is balanced by a corresponding rise in the proportion receiving low levels. These points are best illustrated by considering the patterns for mothers and either parent. Thus, just over a half (57 per cent) received high levels from mothers in Edinburgh but less than a quarter did so (24 per cent) in zone 3 whilst corresponding figures for visiting by either parent were over two-thirds (71 per cent) and less than one-third (30 per cent).

Figure 13 also shows clearly the different contribution of the fathers in the two class groups and also how the two factors of social class and distance taken together are associated with striking differences in visiting. Thus, almost three-quarters of local middle class children (71 per cent) received high levels of visiting from fathers but only 13 per cent of working class children from zone 3 did so.

Levels of evening visiting:

The main feature about evening visiting is that relatively little takes place at this time (Table 7).

Table 7

Proportion of patients receiving low, medium and high levels of evening visiting from principal visitors (all distance zones combined).

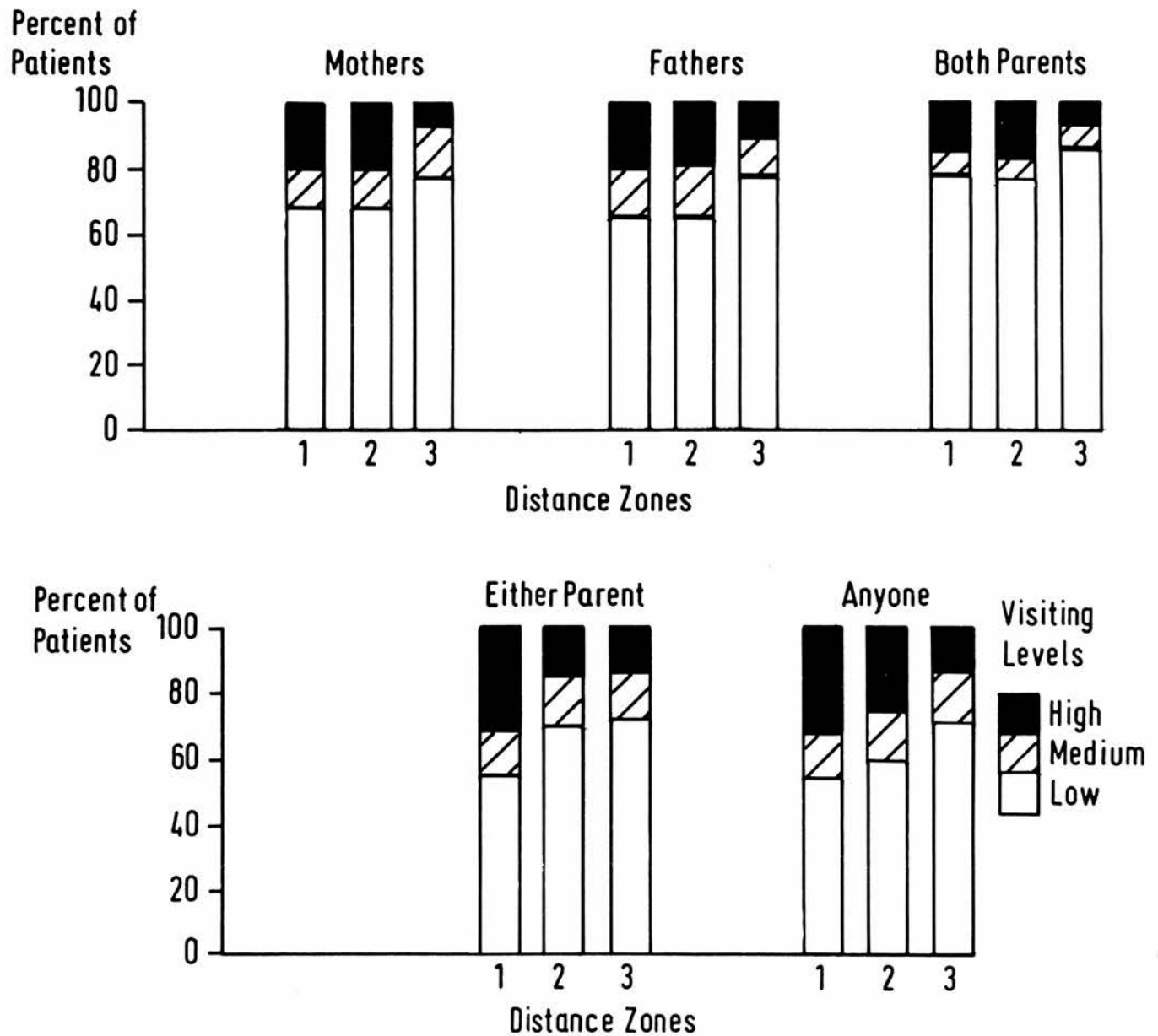
N = 241. Normal families 1st admissions from Wards 1 and 2. Lengths of stay <3 days excluded.

Levels of visiting	Mother		Father		Both Parents		Either Parent		Anyone	
	No.	%	No.	%	No.	%	No.	%	No.	%
Low	171	71	169	69.8	195	80.6	149	61.8	145	60.2
Medium	31	12.9	32	13.2	17	7.0	33	13.7	34	14.1
High	39	16.2	41	16.9	30	12.4	59	24.5	62	25.6
	241	100.1	242	99.9	242	100.0	241	100.0	241	99.9

Almost three-quarters of the patients received low levels of visiting from mothers and when the visiting by either parent is considered almost two-thirds of the patients (62 per cent) still received low levels. Figure 14 shows that this general feature is common to all distance zones but that there is still a distance relationship which shows itself in a rising proportion of patients receiving low levels of visiting as distance increases and correspondingly in a fall in the proportion receiving high levels. (see Table 6 Appendix R)

The net result of these patterns is that the actual proportions of patients receiving evening support from one of their parents at least is constantly low and when the effect of distance

FIGURE 14 PERCENTAGE OF PATIENTS FROM EACH ZONE RECEIVING HIGH, MEDIUM AND LOW LEVELS OF EVENING VISITING



is taken into account the low figures for zone 3 are particularly striking. Thus, over a half of patients from zone 1 received low parental evening visiting (56 per cent) and this figure rose to very nearly three-quarters of the patients in zone 3 (73 per cent).

Bearing in mind the importance that the Platt Report attached to fathers visiting their children and their assumption that the evenings would provide useful opportunities for them to do so it is revealing that their evening visiting is so limited. Thus two-thirds of fathers from zones 1 and 2 (66 per cent) visited at low levels and 80 per cent did so from zone 3. Correspondingly only a fifth (21 per cent) of local fathers visited at a high level and less than a tenth did so from zone 3 (9 per cent).

Finally, an analysis was made of the proportion of children receiving no evening visits at all (Table 8). It can be seen that well over one-third of the total sample saw no visitors in the evening and almost a half did not see their fathers.

Table 8

Percentage of patients from each distance zone receiving no evening visits from principal visitors.

	Mother		Father		Either Parent		Anyone		N.
	No	%	No.	%	No.	%	No.	%	
Zone 1	47	40.2	54	46.2	38	32.5	34	29.1	(117)
Zone 2	25	46.2	26	48.1	22	40.7	22	40.7	(54)
Zone 3	38	54.3	40	57.1	35	50.0	32	45.7	(70)
	110	45.6	120	49.8	95	39.4	88	36.5	(241)

Figure 15 shows the clear relationship between increasing distance and the rising proportion of patients who received no evening visits. A particular figure to note (Table 8) is that for visiting by either parent which shows that a third of local children (33 per cent) and a half of those (50 per cent) in the furthest zone receive no parental visits in the evening.

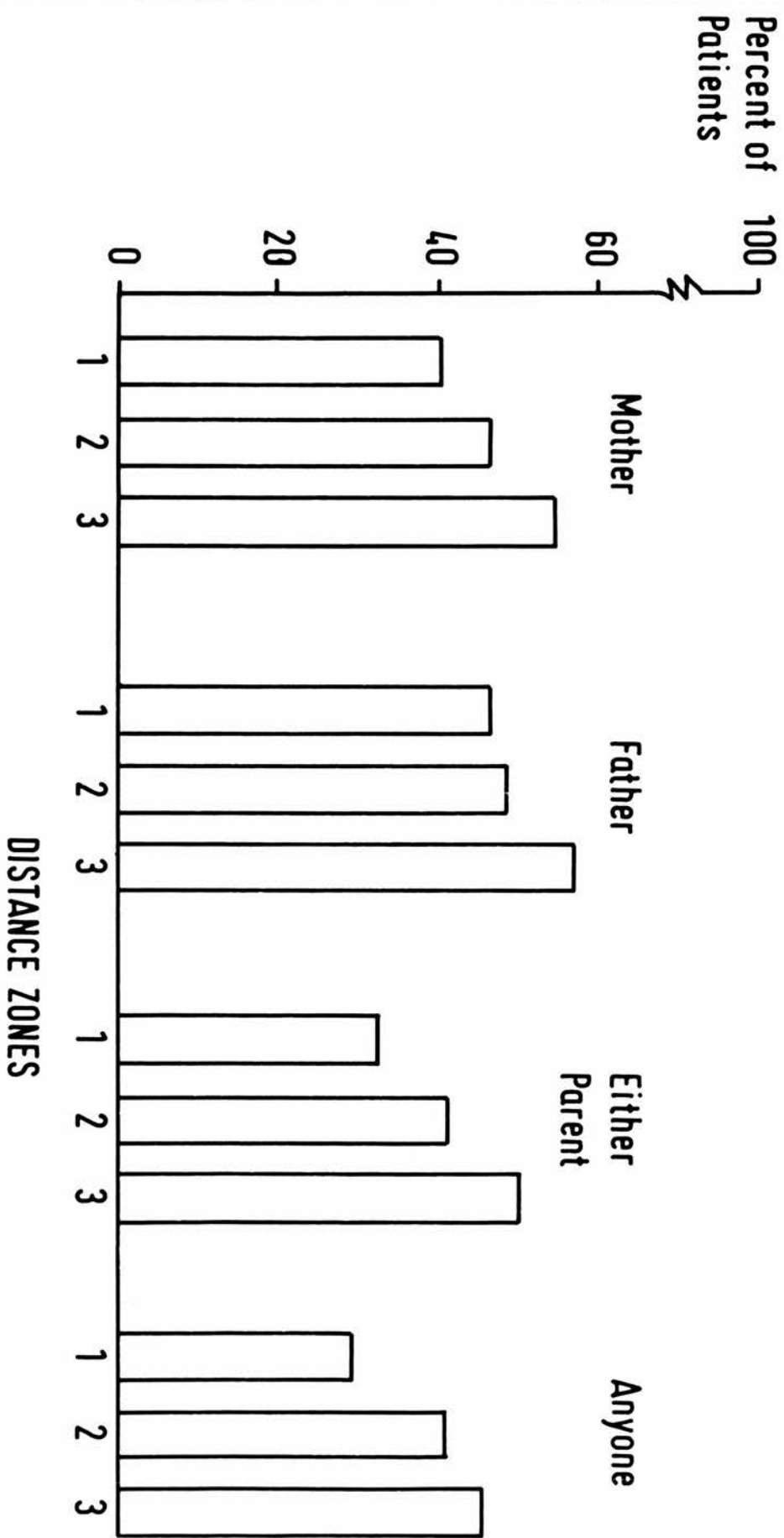
Summary of main observations

1. As distance increases the proportion of children receiving high levels of daily parental visiting declines and correspondingly the proportion receiving low levels of visiting rises.
2. The majority of patients from all distance zones receive low levels of parental evening visiting. There is still a relationship with distance however; the proportion of patients receiving low levels of parental evening visits rises and the proportion receiving high levels falls as distance increases.
3. The proportion of children receiving NO visiting in the evenings is substantial and increases with distance from a third in zone 1 to a half in zone 3.

c) Time Trends of Visiting

The visiting data was analysed finally to see if there were any clear relationships between the amount of visiting and the length of time patients were in hospital and in particular whether any such variations were related to distance. Two specific points were examined. Firstly, the way in which visiting

FIGURE 15 **PERCENTAGE OF PATIENTS FROM EACH DISTANCE ZONE RECEIVING NO EVENING VISITS FROM DIFFERENT VISITORS**



varied throughout the length of stay of patients, and secondly, the amount of visiting which occurred at the beginning of hospitalisation as this is recognised as the time of maximum stress for the child and hence the time when emotional support is most needed. (The Welfare of Children in Hospital, page 20).

Visiting and length of stay: For all patients, irrespective of length of stay, the total number of patient-days of exposure to visiting were first of all calculated for four time periods, viz. $0 \geq 3$ days, $4 \geq 7$ days, $8 \geq 14$ days and $15 \geq 21$ days. The proportion of these days on which visits were made was calculated for different visitors and the results by distance zone are summarised in Figure 16. (see also Table 7 Appendix R) Whilst the actual amount of visiting in zone 3 is lower than in zones 1 and 2 at each time period, visiting in each zone is highest during the first few days in hospital, and has a tendency to decrease with time. This trend however is based on the experience of all patients and the pattern could conceivably be accounted for by different patterns of visiting in short and longer stay cases.

To examine this possibility patients were grouped according to their lengths of stay into the four divisions used above and the analysis was repeated. The results are illustrated in Figure 17. (see also Table 7 Appendix R).

In zones 1 and 2 there are no marked differences between visiting and the length of stay. Irrespective of length of stay visiting is highest in the first week and especially during the

FIGURE 16 PERCENTAGE OF DAYS 1-3 4-7 8-14 AND 15-21
USED BY MAIN VISITORS BY DISTANCE ZONE

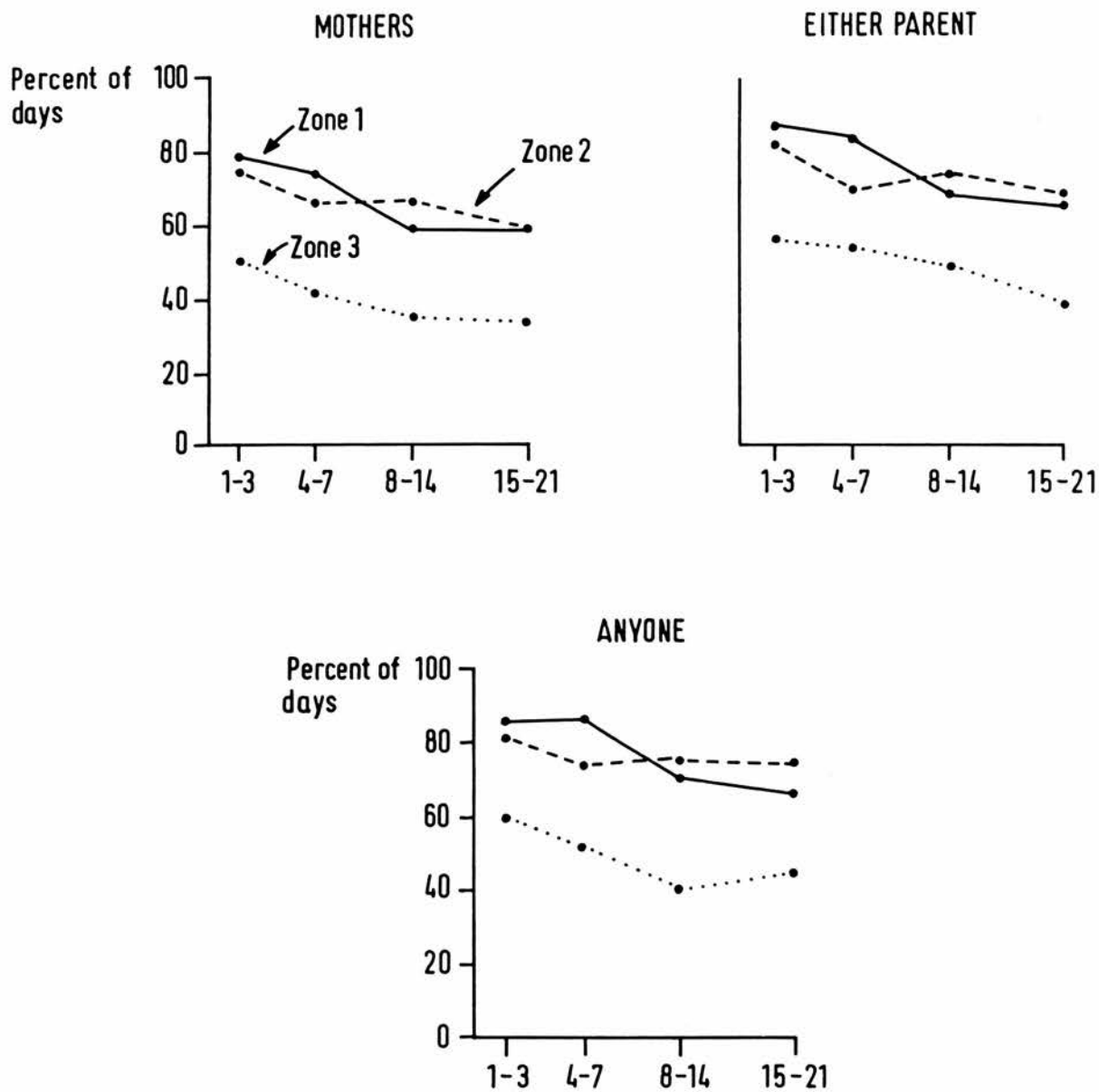
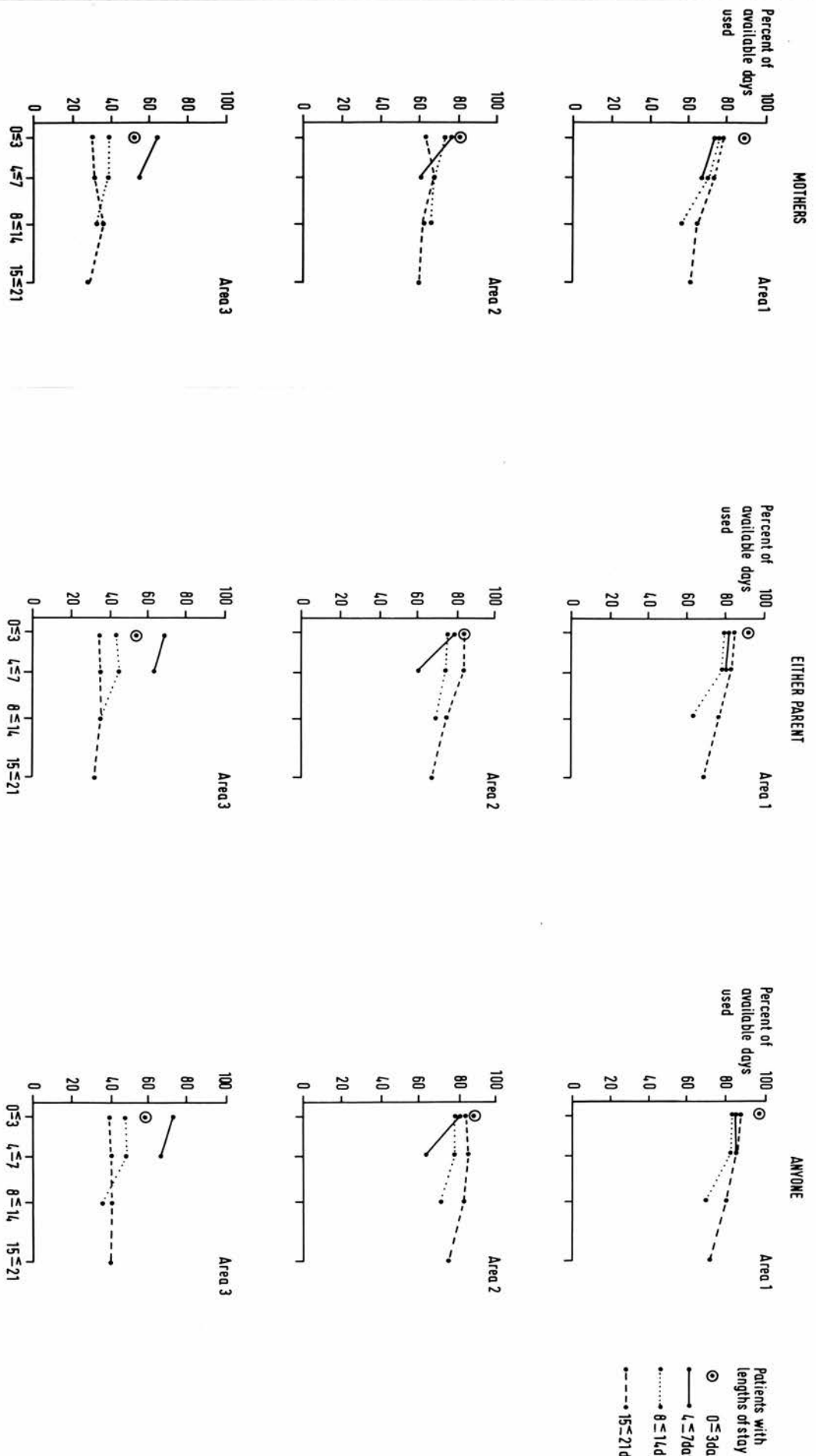


FIGURE 17
PERCENTAGE OF DAYS 1-3, 4-7, 8-14, and 15-21 USED BY MAIN VISITORS
BY DISTANCE ZONE AND LENGTH OF STAY



first three days. Thereafter it decreases slightly. The patterns for zone 3 however are different and there appear to be differences between short (7 days or less) and longer stay cases. Considerably more visiting takes place to the short stay cases with a fall off during the second part of the first week. Visiting to the longer stay cases is at a constantly low level throughout. Various interpretations of these zone 3 patterns are possible. There may have been an awareness on the part of the parents of the probable length of time that patients would be in hospital and that an adjustment in visiting was made according to whether there were longer or shorter stays. Another possibility was that a disproportionate number of the short stay cases were in at a weekend when visiting levels tend to be higher. Examination of the data on admissions by day of the week showed that this was not the case. An alternative explanation is that this is just a chance result but the observation of a relationship between amount and trend of visiting and length of stay in longer distance cases is a point requiring further study.

Visiting at the beginning of hospitalisation: The data about visiting during the first three days that patients were in hospital was extracted separately. This period was selected because of the importance of visiting to the patient at this time, a point commented upon by the Platt Report. (The Welfare of Children in Hospital. Para. 81, page 20).

"The time when a child most needs to see his parents is during the first few days following admission. It is sometimes thought that if a child is only in hospital for a few days he does not need to be visited, or that a child should be left alone until he is "settled". The reverse is true; while his surroundings are new and strange he needs the support of someone he knows and trusts; once he has settled into a hospital routine he is more secure and relies less on his parents. Parents should be particularly encouraged to visit as frequently as possible at the beginning of the child's stay in hospital and short stay cases should be visited at least as frequently as children admitted for a longer period."

It has already been shown (Figure 17) that visiting is highest during the first three days for most children.

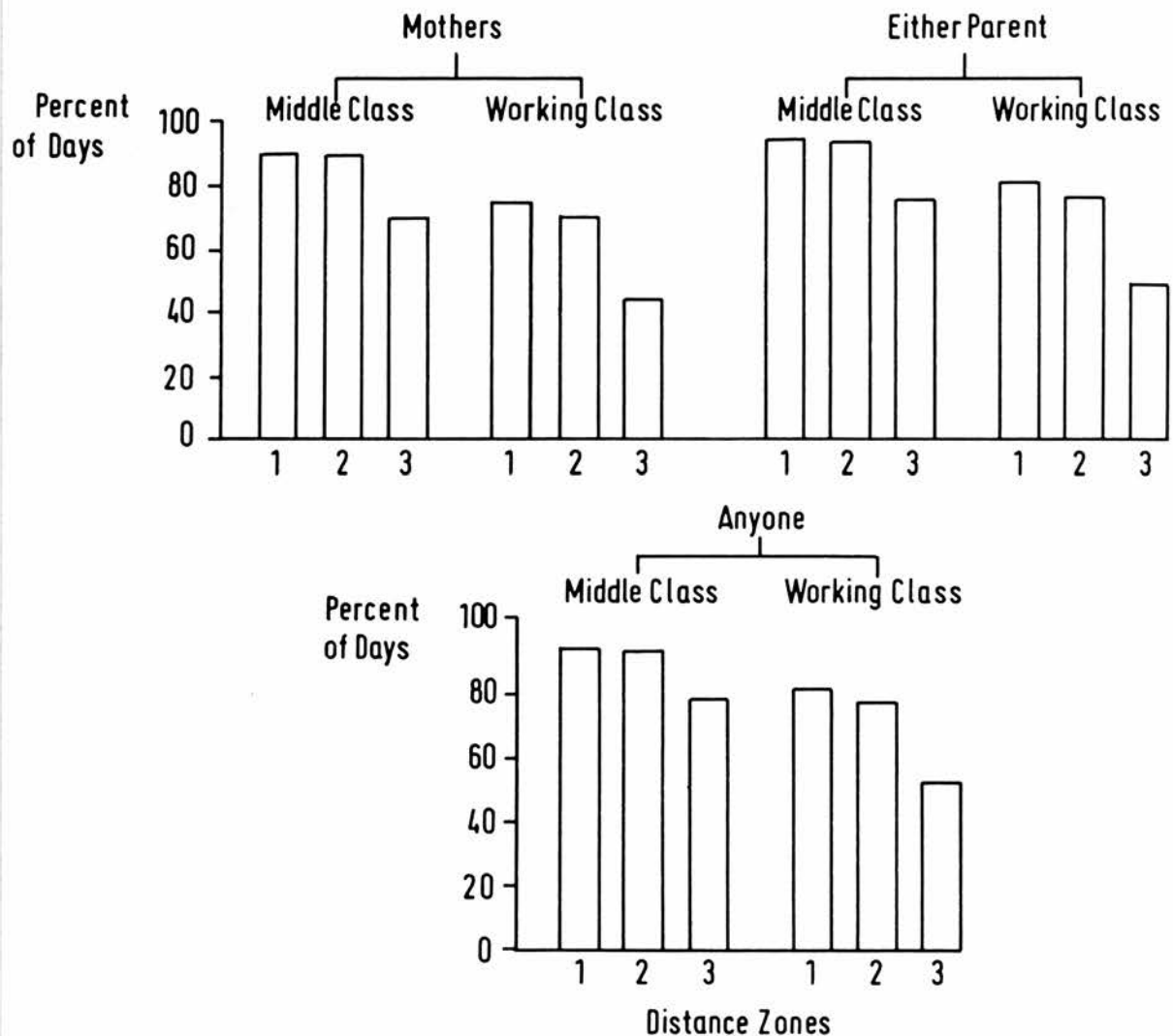
The use made of the first three days of stay (combined) by the main visitors from each distance zone is shown in Table 9. The familiar finding that visiting decreases with increasing distance leading to lowest visiting in zone 3 is repeated during this particularly important stage of hospitalisation. The social class patterns of visiting during the first three days of stay in relation to distance are shown in Figure 18. Firstly, working

Table 9

Use of first three days of stay combined by principal visitors by distance zone.

Distance zone	Days available	Mother		Either parent		Anyone	
		Used	%	Used	%	Used	%
1	447	353	78.9	376	84.1	382	85.5
2	278	210	75.5	223	80.1	226	81.3
3	369	184	49.8	206	55.8	218	59.1

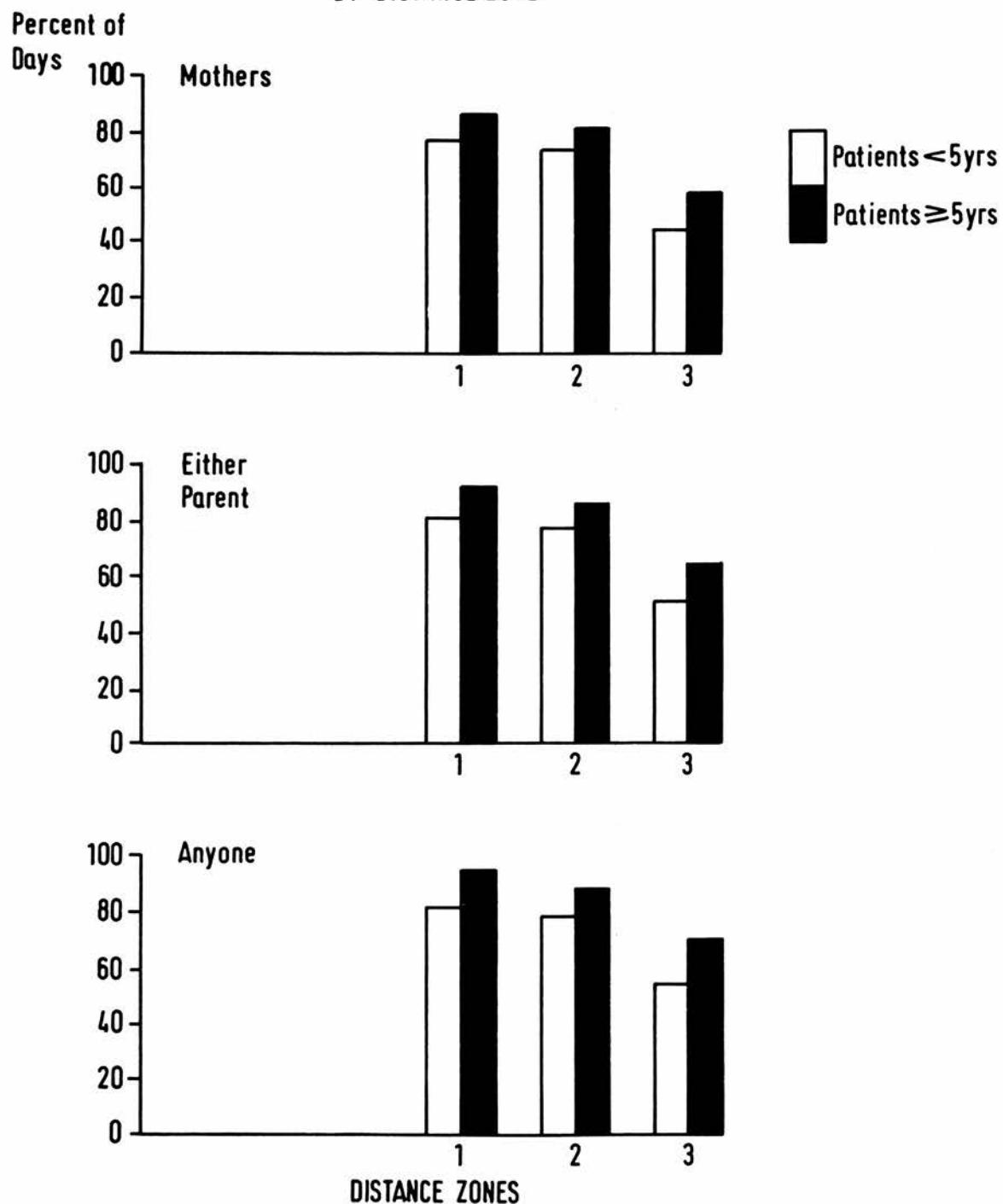
FIGURE 18 PERCENTAGE OF FIRST THREE DAYS OF STAY USED BY SELECTED VISITORS BY GROUPED SOCIAL CLASS AND DISTANCE ZONE



class visiting is always lower than middle class visiting from the same zone; secondly, visiting in both social classes drops slightly from zone 1 to 2 and falls off sharply between zones 2 and 3. Middle class visitors from all zones use over 70 per cent of the available days and from zones 1 and 2 over 90 per cent. Local working class visiting is also high, mothers using 75 per cent of the days available to visit. However, well under a half (44 per cent) of the days are used by mothers from zone 3 and even when all other visitors are considered children from this social class group and distance zone receive visits on only about half of the available days (52 per cent). Thus, during this particularly important period of hospital stay working class children from beyond 15 miles again emerge as a markedly under-visited group. Full details of visiting by social class and distance are given in Table 8 Appendix R.

Lastly, visiting during the first three days was assessed for patients under and over five years of age and the results are presented in Figure 19 and in detail in Table 9 Appendix R. The pattern of visiting to these groups during this early stage of hospitalisation is similar to the visiting to these age groups in general. Visiting to both groups declines with increasing distance and, with under fives always receiving fewer visits, this leads to the lowest visiting to this group from zone 3. These children are visited by their mothers on less than a half (45 per cent) and by anyone, on slightly more than a half (54 per cent) of the available days.

FIGURE 19 **PERCENTAGE OF FIRST THREE DAYS OF STAY USED BY MAIN VISITORS TO VISIT PATIENTS UNDER AND OVER 5 YEARS OF AGE BY DISTANCE ZONE**



Summary of main observations

1. Visiting to patients from zones 1 and 2 was highest during the initial stages of hospitalisation and declined slightly thereafter, irrespective of length of stay.
2. Visiting to patients from zone 3 appeared to vary depending on length of stay. Longer stay cases (8 days and over) were visited markedly less than short stay cases and showed no pronounced fall off with time.
3. The amount of visiting decreased as distance increased during the first three days of stay.
4. The general finding that working class children were visited less than middle class children also applied during the first three days of stay.
5. Working class children from zone 3 were a markedly under-visited group during the first three days of stay.
6. The general finding that children under 5 years of age were visited less than older children also applies during the first three days of stay.
7. Children under 5 from zone 3 were a markedly under-visited group during the first three days of stay.

3) Family access to hospital

The questionnaire returns provided details of vehicle ownership, parental driving status and usual method of transport when going to visit at the hospital. From this information the following analysis of family access to hospital was made.

Vehicle ownership: For the sample as a whole about a half of families owned at least one vehicle and a half owned none (Table 10). However, twice as many middle class families (approx. 80 per cent) owned vehicles as working class families (approx. 40 per cent) and these social class differences were statistically highly significant (Table 11). The pattern of ownership by social class was common to each distance zone (Figure 20 and Table 1 Appendix S).

Table 10

Transport ownership by area of residence.

Number of vehicles	Area 1		Area 2		Area 3		Totals	
	No. of families	%	No. of families	%	No. of families	%	No. of families	%
Not known	3	1.9	5	5.3	0	0	8	2.1
None	80	52.0	36	38.3	60	47.2	176	46.9
One	70	45.5	51	54.3	63	49.7	184	49.1
Two or more	1	0.6	2	2.1	4	3.1	7	1.9
Totals	154	100	94	100	127	100	375	100

N = 375

Transport use and access to hospital: A small proportion of the families lived close enough to the hospital for the parents to walk when going to visit. Overall, about one third (35 per cent) of mothers used private, and slightly more than a half (55 per cent) public, as their usual method of transport when travelling to hospital (Table 12). For fathers these proportions were almost

FIGURE 20
TRANSPORT OWNERSHIP BY GROUPED SOCIAL CLASS
AND ZONE OF RESIDENCE

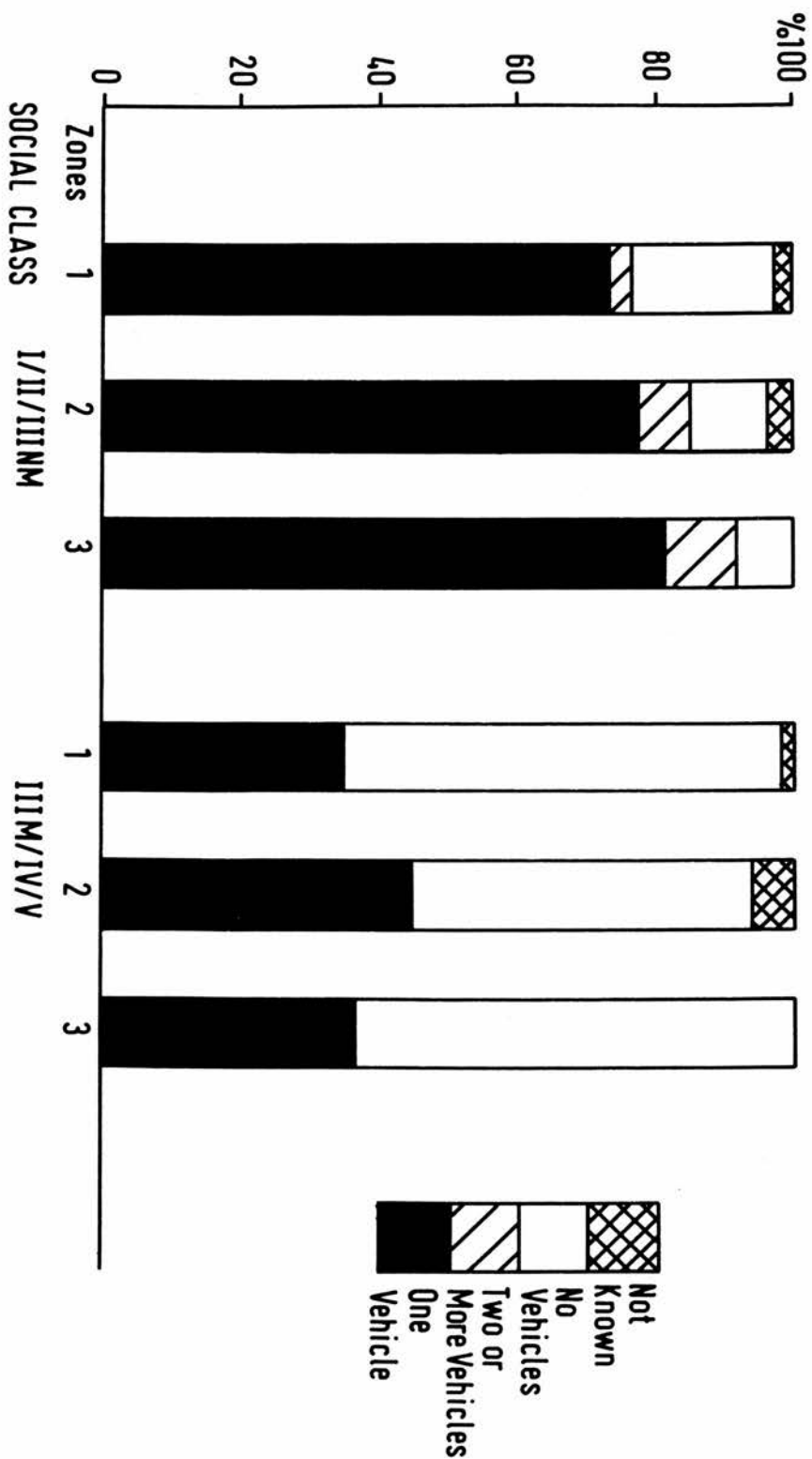


Table 11

Transport ownership by grouped social classes

Number of Vehicles	Upper social classes I, II and III N.M.		Lower social classes IIIM, IV and V	
	Number of families	%	Number of families	%
Not known	2	1.9	6	2.2
None	15	14.2	161	59.9
One	82	77.3	102	37.9
Two or more	7	6.6	0	0
Totals	106	100	269	100

$$N = 375 \quad x^2 = 56.8 \quad D.F. = 1 \quad P < .0005$$

Table 12

Usual method of transport used by mothers and fathers when going to visit hospital

Method of Transport	Number of Mothers	%	Number of Fathers	%
Not known	11	3.3	13	4.5
Public	185	55.4	103	35.6
Private	117	35.0	162	56.0
Various	6	1.8	1	0.3
Walking	15	4.5	10	3.5
Totals	334	100	289	99.9

* N = 334

** N = 289

reversed. More than a half used private transport (56 per cent) and only about one-third (36 per cent) travelled by the public system.

Social class differences in travel patterns were striking (Table 13). Over two-thirds (70 per cent) of middle class mothers but only about one-fifth (20 per cent) of working class mothers travelled by private vehicles. The proportions of mothers using public transport were almost exactly reversed. The corresponding patterns for fathers were as marked. 85% of middle class men, but only 43 per cent of working class men usually used private vehicles. The respective figures for public transport were 6 per cent and approximately 50 per cent.

Table 13

Usual method of transport used by mothers and fathers when going to visit - by social class.

Method of Transport	Upper Social classes I/II/III N.M.				Lower Social classes IIIM/IV/V			
	Number of Mothers*	%	Number of Fathers**	%	Number of Mothers*	%	Number of Fathers**	%
Not known	4	3.9	5	5.6	7	3.0	8	4.0
Public	22	21.6	5	5.6	163	70.3	98	49.3
Private	71	69.6	77	85.7	46	19.8	85	42.7
Various	0	0	1	1.1	6	2.6	0	0
Walking	5	4.9	2	2.2	10	4.3	8	4.0
Totals	102	100	90	100	232	100	199	100

*N = 334

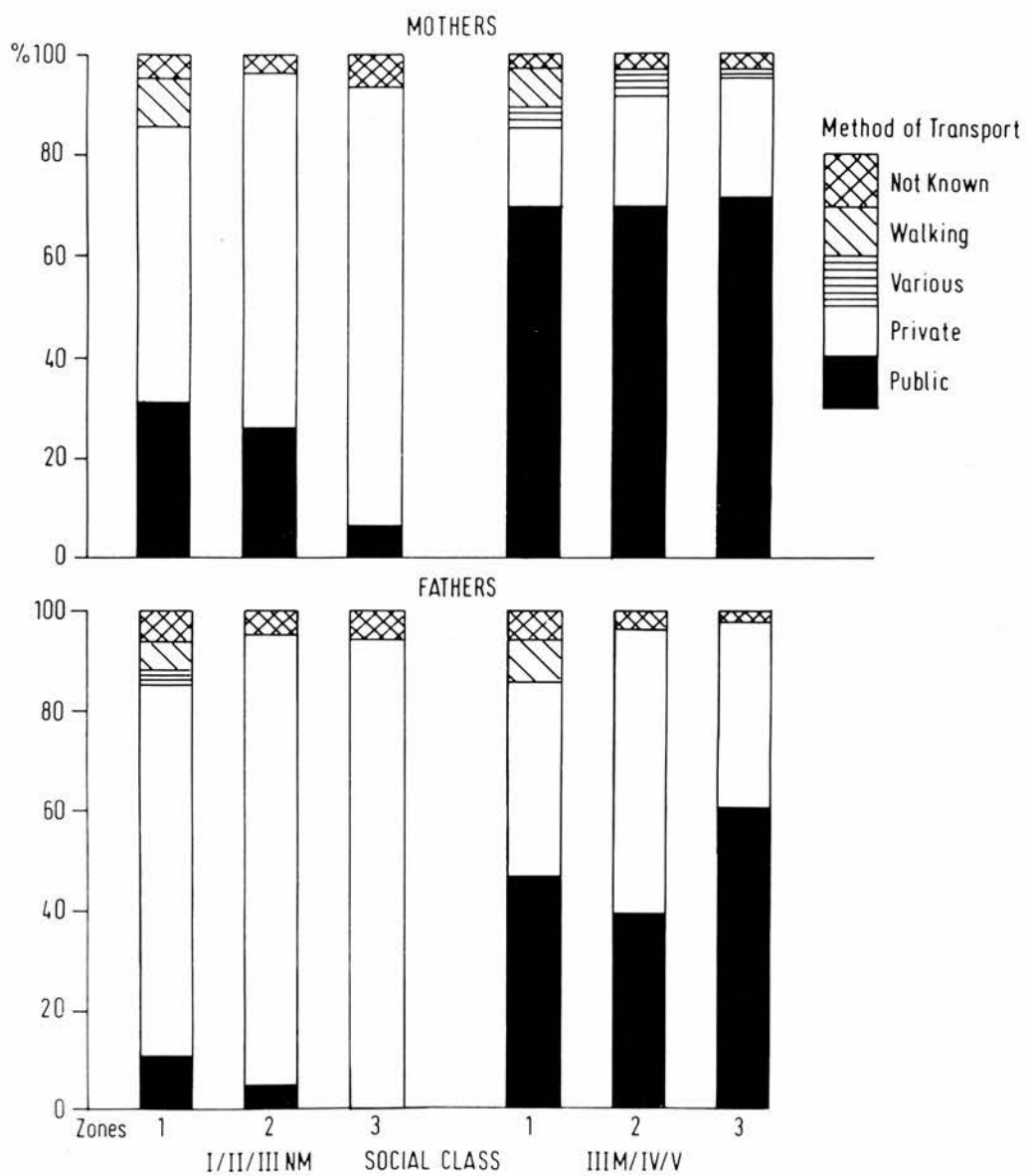
**N = 289

There were interesting variations in the use made of the different transport systems by the middle and working classes as distance of residence from the hospital increased (Figure 21). The proportion of middle class mothers using private transport increased from 55 per cent in zone 1 to 80 per cent in zone 3. Correspondingly, the proportion using public transport fell sharply from about 30 per cent to less than 10 per cent. (This trend was statistically significant at the 5 per cent level). Working class mothers were high users of public transport with about 70 per cent doing so from each zone. While the use of private transport in these cases was low, it nevertheless also increased with distance of residence as in the case of middle class mothers. (Table 2 Appendix S).

Travel by middle class fathers showed the same features as for mothers only in more exaggerated form. The proportion using private transport increased from about 75 per cent in zone 1 to over 90 per cent in zone 3 whilst public transport users fell from only about 10 per cent to none at all. No such clear cut patterns were discernible in the case of working class fathers. (Table 3 Appendix S).

Summary: Vehicle ownership was clearly related to social class being more than twice as common in middle class as in working class families. This disparity in vehicle ownership was clearly reflected in travel patterns. The use of private transport by both mothers and fathers was much greater in the middle classes,

FIGURE 21 USUAL METHOD OF TRANSPORT USED BY MOTHERS AND FATHERS WHEN GOING TO VISIT HOSPITAL - BY GROUPED SOCIAL CLASS AND ZONE OF RESIDENCE



the working class parents mainly travelling by public transport. The highest users of private transport were middle class fathers and the highest users of public transport were working class mothers. It was notable that the use of public transport by middle class parents declined sharply with distance from the hospital.

Discussion of family access to hospital: Some tentative explanations of the above facts about transport use are now given and the remainder of the discussion deals more generally with family access focussing on the travel times and travel costs involved.

The high use of private vehicles by middle class fathers probably reflects a high level of car ownership and the fact that in middle class car owning families husbands are invariably able to drive (Table 14). The high use of private transport by mothers in middle class car-owning families may in part be accounted for by the fact that middle class parents often travel together when visiting but also because a relatively high proportion of such women are able to drive (51 per cent) (Table 14). Hence if vehicles are available for use during the day, either by families owning two cars or, where only one car is owned, perhaps as a result of husbands making alternative arrangements for getting to work, these mothers will be able to use them. It is interesting that the proportion of middle class mothers who are able to drive rises sharply with distance of residence from the hospital

Table 14

Mothers' driving status by grouped social classes:
car owning families only.

Whether able to drive	Upper Social Classes I/II/III N.M.		Lower Social Classes IIIM/IV/V		Totals	
	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%
Not known	10	10.9	34	31.8	44	22.1
Yes	47	51.0	14	13.1	61	30.7
No	35	38.1	59	55.1	94	47.2
Totals	92	100	107	100	199	100

Fathers' driving status by grouped social classes:
car owning families only.

Whether able to drive	Upper Social Classes I/II/III N.M.		Lower Social Classes IIIM/IV/V		Totals	
	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%
Not known	2	2.2	6	5.6	8	4
Yes	90	97.8	100	92.5	190	95
No	0	0	2	1.9	2	1
Totals	92	100	108	100	200	100

(Table 15). Taken in conjunction with the marked fall in their use of public transport with distance this suggests that middle class families place increasing importance on the motor car as their means of transport the further away from the city that they live. Presumably they find public transport an inconvenient alternative, partly because of the infrequency of services and also because of the longer overall journey times that public transport entails. The smaller proportion of middle class mothers from zone 1 who drive may be a point supporting this argument. Here, the pressure on a mother to be able to drive may not be so great because city journeys are relatively short and the public transport service operates with much greater frequency than in out of town areas. Thus, several factors, such as car-ownership and personal choice, possibly contribute to the generally high use made of private transport by middle class fathers (86 per cent) and mothers (70 per cent) as well as the different levels of use of cars between zones 1 and zones 2 and 3.

In the case of working class parents their high use of public transport is no doubt largely due to their relatively low levels of car ownership. However, when working class and middle class car owning families are compared some interesting differences emerge. Whereas about 80 per cent of middle class mothers from these families usually travelled by car only 48 per cent of working class mothers did so (Table 16). The data about driving status suggest that this difference may in part arise because fewer working class mothers are able to drive (13 per cent compared

Table 15

Driving status of mothers by grouped social class and area of residence
Car owning families only.

Whether able to drive	Upper Social Classes						Lower Social Classes					
	Area 1			Area 2			Area 3			Area 1		
	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%
Not known	5	15.3	2	8	3	8.8	12	30	11	32.4	11	33.3
Yes	13	39.4	13	52	21	61.8	4	10	4	11.6	6	18.4
No	15	45.3	10	40	10	29.4	24	60	19	56	16	48.3
Totals	33	100	25	100	34	100	40	100	34	100	33	100

Driving status of fathers by grouped social class and area of residence
Car owning families only.

Whether able to drive	Upper Social Classes						Lower Social Classes					
	Area 1			Area 2			Area 3			Area 1		
	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%
Not known	1	3.0	1	4	0	0	2	4.9	4	11.8	0	0
Yes	32	97.0	24	96	34	100	39	95.1	29	85.3	32	97
No	0	0.0	0	0	0	0	0	0	1	2.9	1	3
Totals	33	100	25	100	34	100	41	100	34	100	33	100

Table 16

Usual method of transport used by mothers when going to visit
By social class grouped and distance zone. Car owning families only.

Method of Transport	Upper Social Classes I/II/III N.M.						Lower Social Classes IIIM/IV/V					
	Area 1			Area 2			Area 3			Area 1		
	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%	No. of Mothers	No. of Mothers	%	No. of Mothers
Not known	1	3.1	0	0	2	6.5	1	2.8	0	0	0	1
Public	5	15.5	5	21.7	2	6.5	17	47.1	12	44.5	10	38.4
Private	23	72	18	78.3	27	87	16	44.5	12	44.5	14	54.0
Various	0	0	0	0	0	0	2	5.6	3	11	1	3.8
Walking	3	9.4	0	0	0	0	0	0	0	0	0	0
Totals	32	100	23	100	31	100	36	100	27	100	26	100

Usual method of transport used by fathers when going to visit
By social class grouped and distance zone. Car owning families only.

Method of Transport	Upper Social Classes I/II/III N.M.						Lower Social Classes IIIM/IV/V					
	Area 1			Area 2			Area 3			Area 1		
	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%	No. of Fathers	No. of Fathers	%	No. of Fathers
Not known	2	6.4	0	0	2	6.1	1	1	0	0	0	0
Public	0	0	0	0	0	0	1	1	0	0	1	5
Private	28	90.4	21	100	26	93.9	33	28	28	19	95	0
Various	1	3.2	0	0	0	0	0	0	0	0	0	0
Walking	0	0	0	0	0	0	0	0	0	0	0	0
Totals	31	100	21	100	28	100	35	100	28	100	20	100

to 51 per cent middle class mothers, Table 14). Unfortunately there was a large percentage of 'not known' answers to the question on driving status particularly from working class mothers. However, from the way in which the relevant question was worded on the questionnaire (see Appendix F) it is likely that the majority of the 'not known' responses were in fact negative, i.e. not able to drive. If it is the case that in working class car owning families few mothers are able to drive, then family mobility by car will depend upon the presence of the father (most of whom drive, Table 14), to a much larger extent than in corresponding middle class families. It follows that the index of car-ownership cannot be accepted as a direct indicator of a family's capacity for daily mobility especially in the working class.

Returning to the observation that working class parents largely depend on public transport whilst the middle class generally travel by private car it would appear from the following analysis of travel time and cost that access to this hospital is more convenient for the middle than the working class. Originally it was intended to use the data collected in the questionnaire for an analysis of travel times and costs but in the event this could not be done satisfactorily. For example it was difficult to arrive at a representative travel time from a given town on the basis of a small number of families taking varying times for the journey. Again, quoted shortest journey times from the same town showed discrepancies which suggested that some parents included time spent on other activities, such as shopping, in their estimates.

Faced with such difficulties it was decided to employ indirect methods to examine the travel time and travel cost of access. These involve the use of estimates of travel speeds and costs for private transport journeys and published timetable and faretable information for travel by public transport. These methods have been widely applied in other fields (Jackson 1966) as well as in relation to medical care planning and are helpful in illustrating broad differences in access times and costs in spite of limitations which arise from the need to make initial assumptions.

In this case diagrams and diagram maps were compiled (Figures 22 - 27) to show travel times and travel costs of access to this particular hospital from selected local and regional centres. The assumptions and criteria adopted in their construction have been included in the footnotes. Details of public transport journeys are based on information from Autumn 1969 timetables and faretables. For private transport assumptions were made regarding the speed of car travel and the average costs of petrol per mile. In all diagrams only a selection of towns and suburbs which contributed patients to the sample has been included.

Travel time of access¹

Figure 22 compares the access times for journeys by private and public transport from Edinburgh suburban locations. Generally journeys by public take twice as long as by private transport. Thus, from most of the chosen locations it takes between 15 and 20 minutes to reach hospital by car and between 30 and 40 minutes by bus. The same data is shown in diagram map form in Figure 23. Here insertion of the equivalent private transport isochrone for the journey from Haddington in East Lothian emphasises the access times by bus from the Edinburgh suburbs.

1. Criteria used in construction of travel-time diagrams.

Public transport

1. Assumption made that bus was the normal method of transport except where a rail alternative existed within 10 miles of a selected town and the journey time to hospital via rail was shorter than the alternative bus journey. In such cases travel times by both train and bus are plotted.
2. The fastest available bus or train service was selected.
3. Travel times in official timetables were used.
4. For journeys in zone 1, 5 minutes were added for time elapsed between visitor leaving home and boarding bus at beginning of journey - for journeys from zones 2 and 3, 10 minutes added.
5. 5, 10 or 15 minutes were added for time elapsed between visitor leaving bus and arriving in hospital - actual addition dependent on location of bus setting down point in relation to hospital.
6. 5 minutes were added where a change of local bus was necessary en route. Actual bus/rail connection details were used where these were timetabled.
7. Assumption made that journeys to hospital were made at times outside the morning and evening peak traffic times in Edinburgh.

Private transport

1. Assumption made that travel was by private car.
2. Overall average journey speeds for visitors were assumed to be:
From zone 1 - 15 m.p.h. From zones 2 and 3 - 30 m.p.h.
3. Routes taken were the shortest on A or B roads between home and hospital.

FIGURE 22 COMPARATIVE ACCESS TIMES FROM SUBURBAN EDINBURGH LOCATIONS TO THE ROYAL HOSPITAL FOR SICK CHILDREN FOR PRIVATE AND PUBLIC TRANSPORT

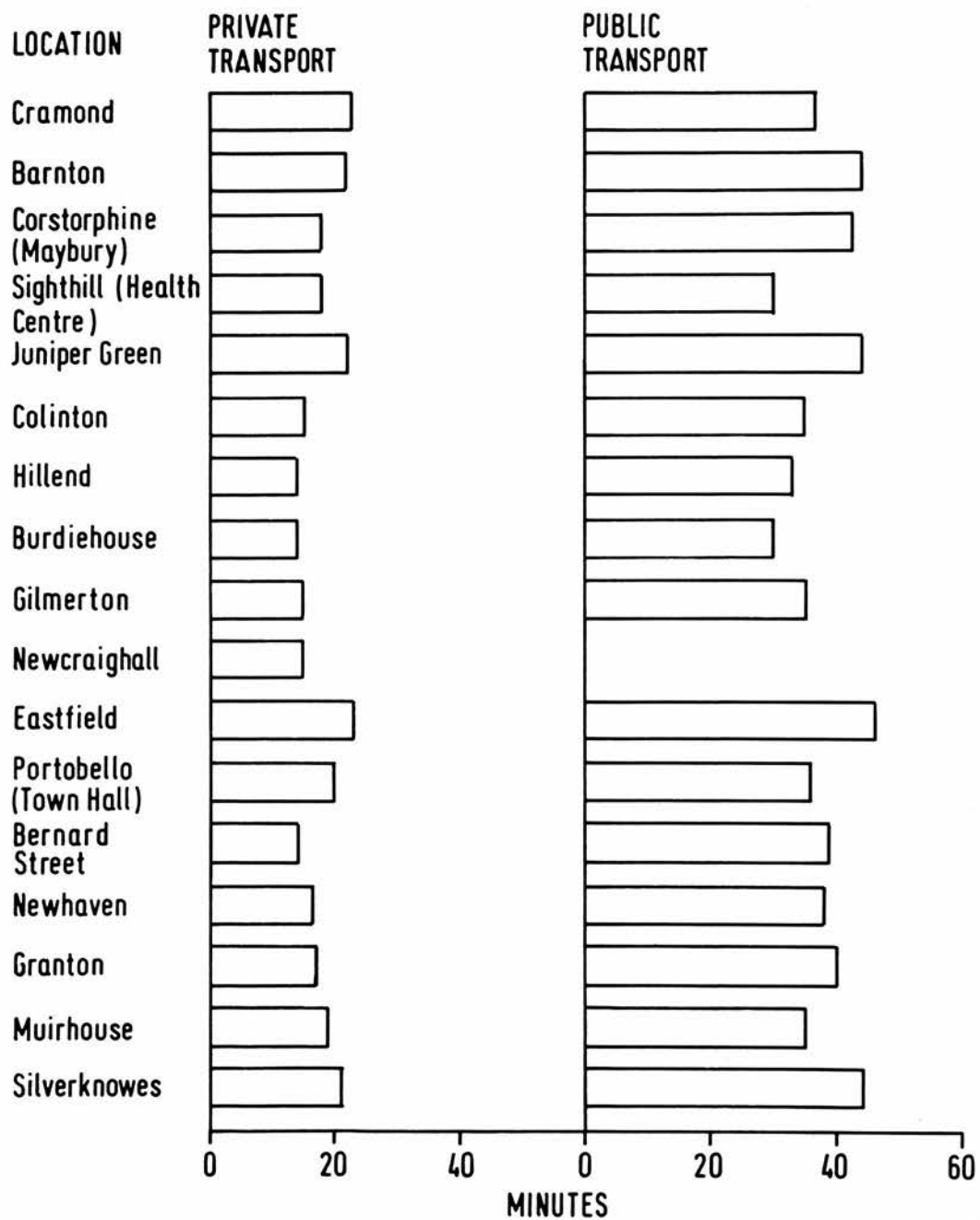
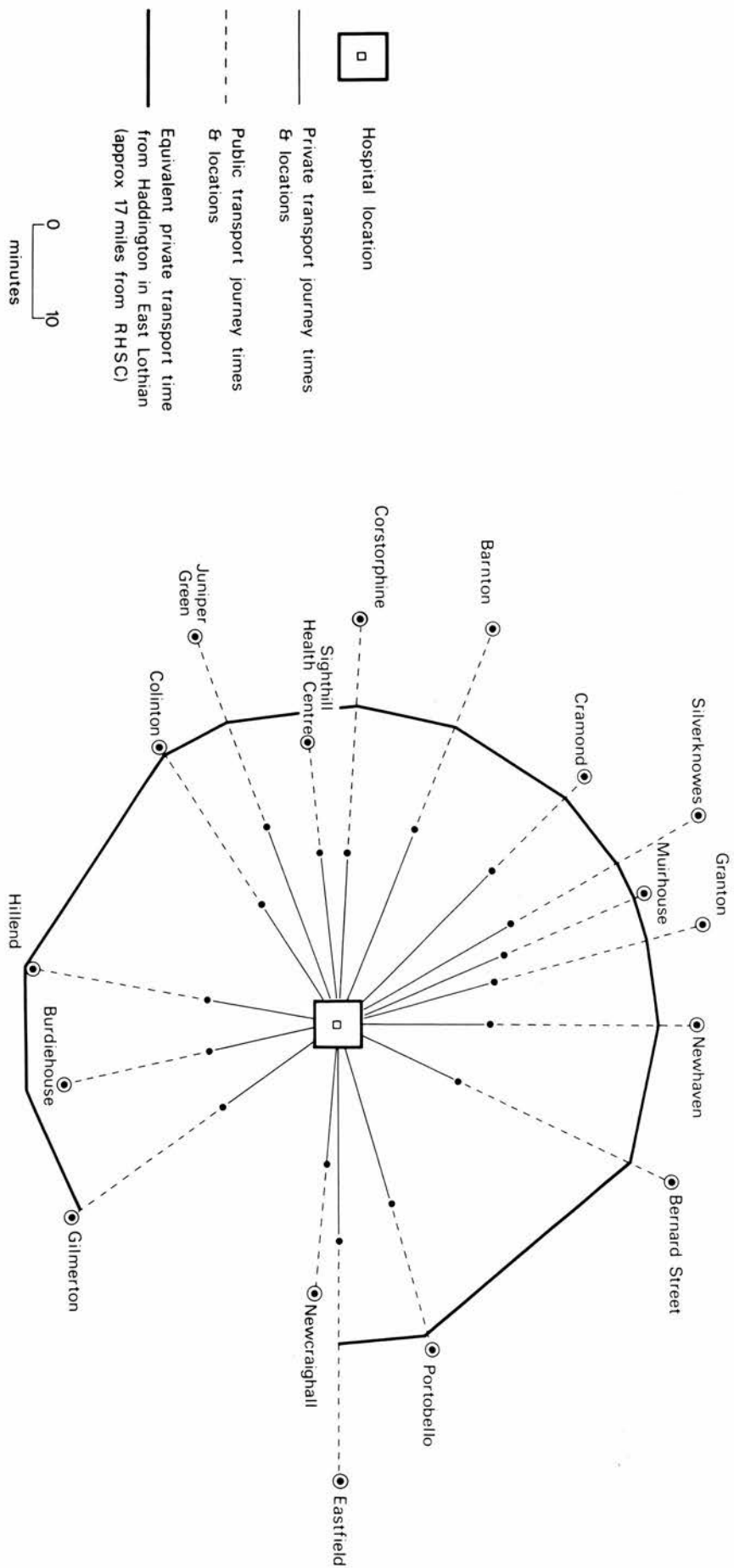


FIGURE 23

Relative travel times of access to the Royal Hospital for Sick Children Edinburgh by private and public (bus) transport from selected centres within the city



Thus with the exception of one or two of the Southern suburban locations it takes as long or longer to reach the hospital by bus from the outer Edinburgh area ($3\frac{1}{2}$ - 5 miles) as it does from Haddington when travelling by car (17 miles). Figures 24 and 25. show the comparable situation for journeys from centres in the regional catchment area. Most public transport journeys take over an hour and it is common to take between two and two and a half hours from the Border towns. It will also be noted that where a rail alternative exists journeys are shorter than by bus, sometimes considerably so, but that private transport access times are much shorter than by either form of public transport.

This time disadvantage of access by public transport is shown in diagram map form in Figure 25, and is highlighted by the insertion of the private transport isochrone for the journey from Glasgow (44 miles from the hospital). It takes almost as long to reach the hospital by public transport from the urban centres of West Lothian, East Lothian, and Southern Fife as it would take to travel by private car from Glasgow, whilst in the case of many of the Border towns access by bus would take almost as long as the private transport journey from Glasgow to Edinburgh and back again to Glasgow. The same point has been stressed in Figure 25 by plotting the regional hospital board boundary on the basis of private transport travel times from the hospital. This shows that public transport journey times from towns in the outer catchment area of this hospital take as long as private transport journeys from locations well inside the adjoining hospital board areas of

FIGURE 24 COMPARATIVE ACCESS TIMES FROM REGIONAL LOCATIONS TO THE ROYAL HOSPITAL FOR SICK CHILDREN FOR PRIVATE AND PUBLIC TRANSPORT JOURNEYS
(Dotted lines represent rail travel times)

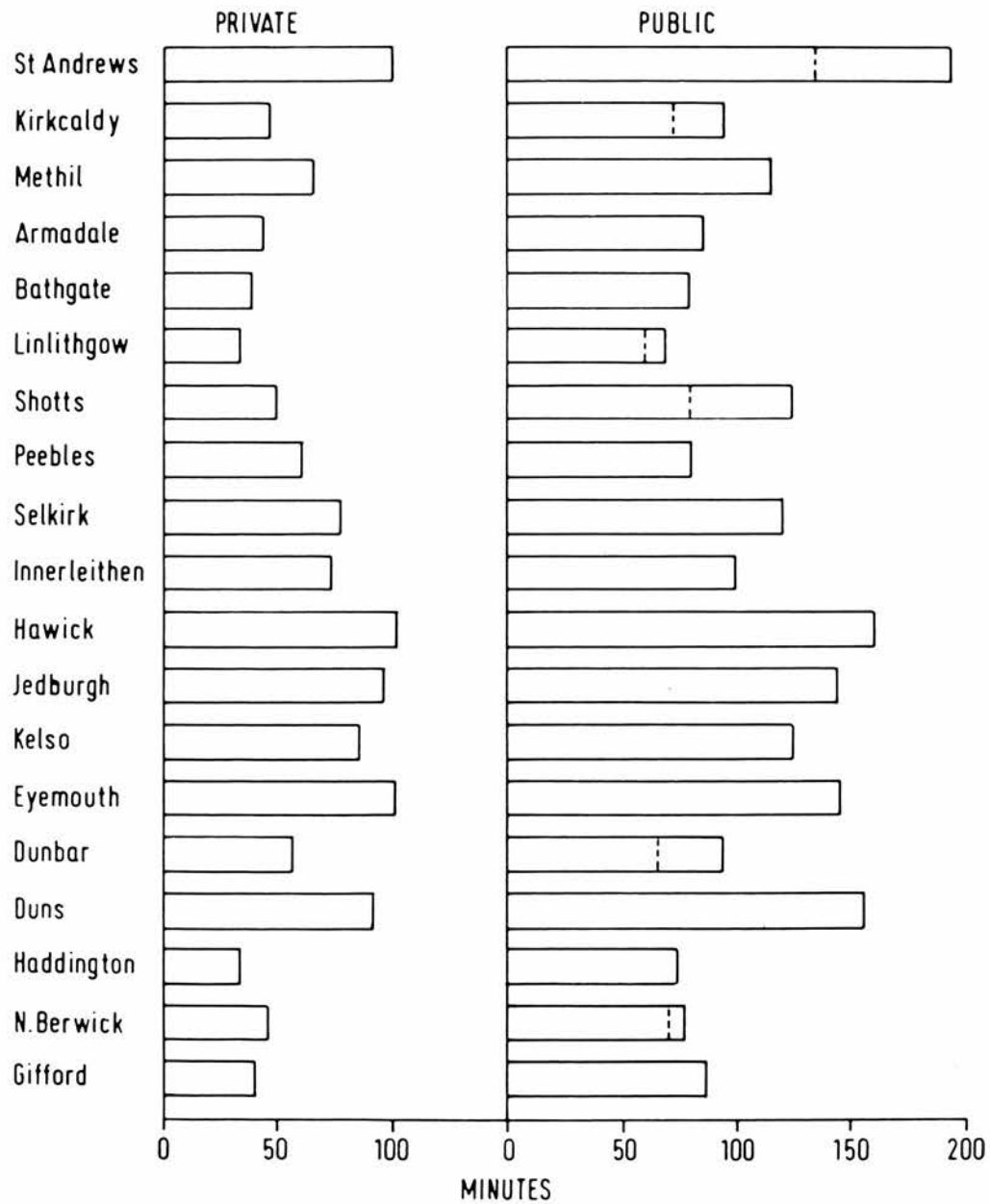
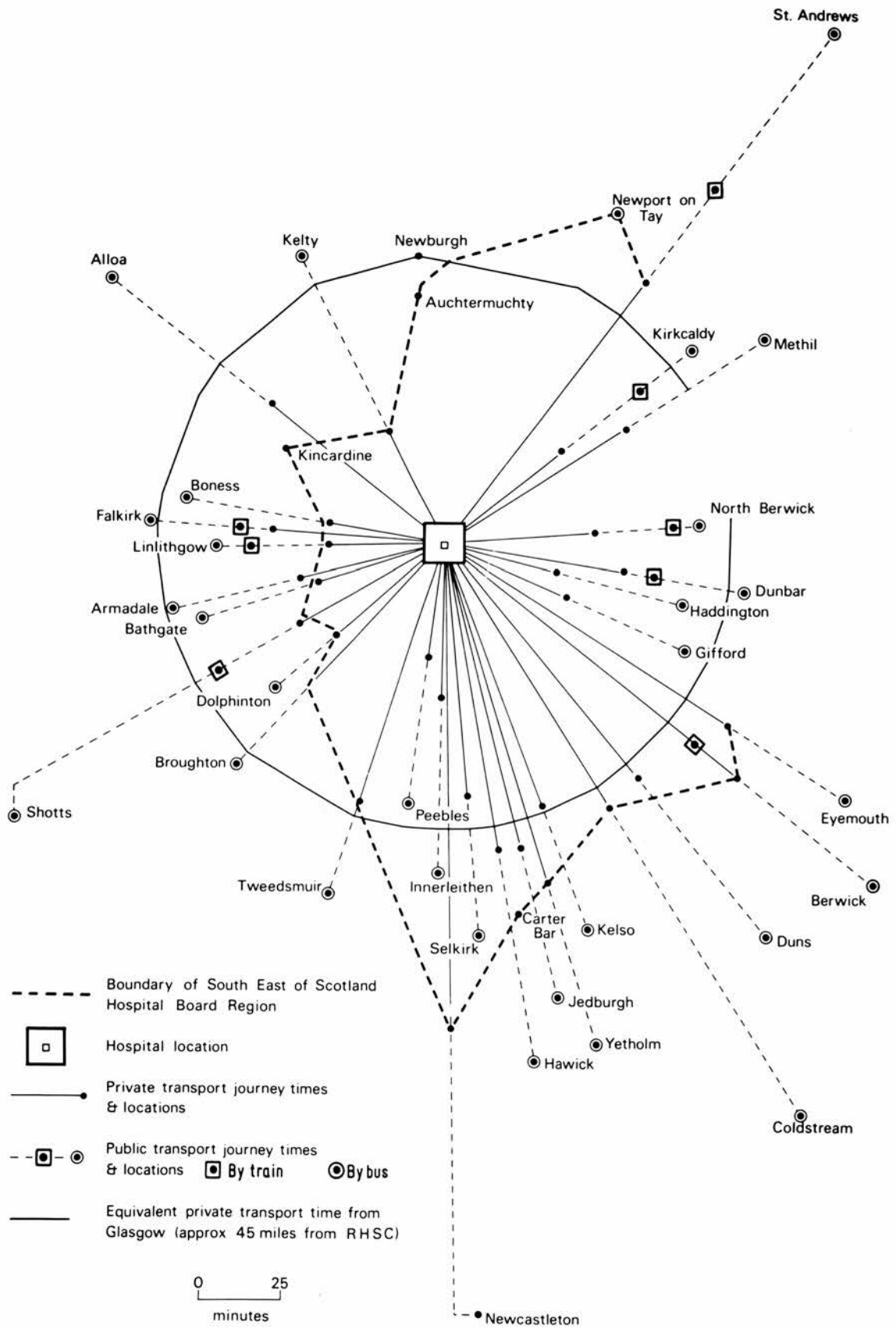


FIGURE 25

Relative travel times of access to the Royal Hospital for Sick Children Edinburgh, by private and public (bus) transport from selected locations within the region



Western and Eastern Scotland and Newcastle in England.

It is interesting to assess the total amount of time that a parent living beyond fifteen miles from the hospital would spend in travelling if daily visiting were maintained for 7 days (the approximate length of stay of patients in this study). Depending upon the actual location of the home residence the total travel time would be between $10\frac{1}{2}$ - 21 hours for journeys by car but 21 - 35 hours by bus. If these demands on a parent's time are viewed in relation to their other responsibilities, such as caring for other members of the family, then travel time alone might preclude daily visiting for many mothers. This may be so particularly for working class parents who are so dependent on public transport and who usually have larger families than the middle class.

Figures 26 and 27 represent the travel costs¹ that would

1. Criteria used in construction of travel cost diagrams.

Public transport (Travel by rail was not costed in view of small numbers of visitors who had the option of travelling by train)

1. Assumption made that travel was by the cheapest available return service.
2. Travel costs from current official fare tables were used.
3. It was assumed that both parents visited each day for one week.
4. It was assumed that only one return journey was made by each parent each day.

Private transport

1. It was assumed that travel was by medium sized family car. (1100 c.c.).
2. It was assumed that travel costs were based on the following details:
 - a) Premium Grade Petrol used at 6/6d. per gallon.
 - b) Fuel consumption for journeys in zone 1: 28 m.p.g.;
for journeys from zones 2 and 3 : 35 m.p.g.
3. It was assumed that visiting occurred as for public transport users and in addition that the two parents always travelled together.

FIGURE 26

Relative weekly travel costs by private and public (bus) transport from selected centres within the city

Assumed conditions: 1 Daily visiting by mothers and fathers
2 When private transport used by parents travelling together

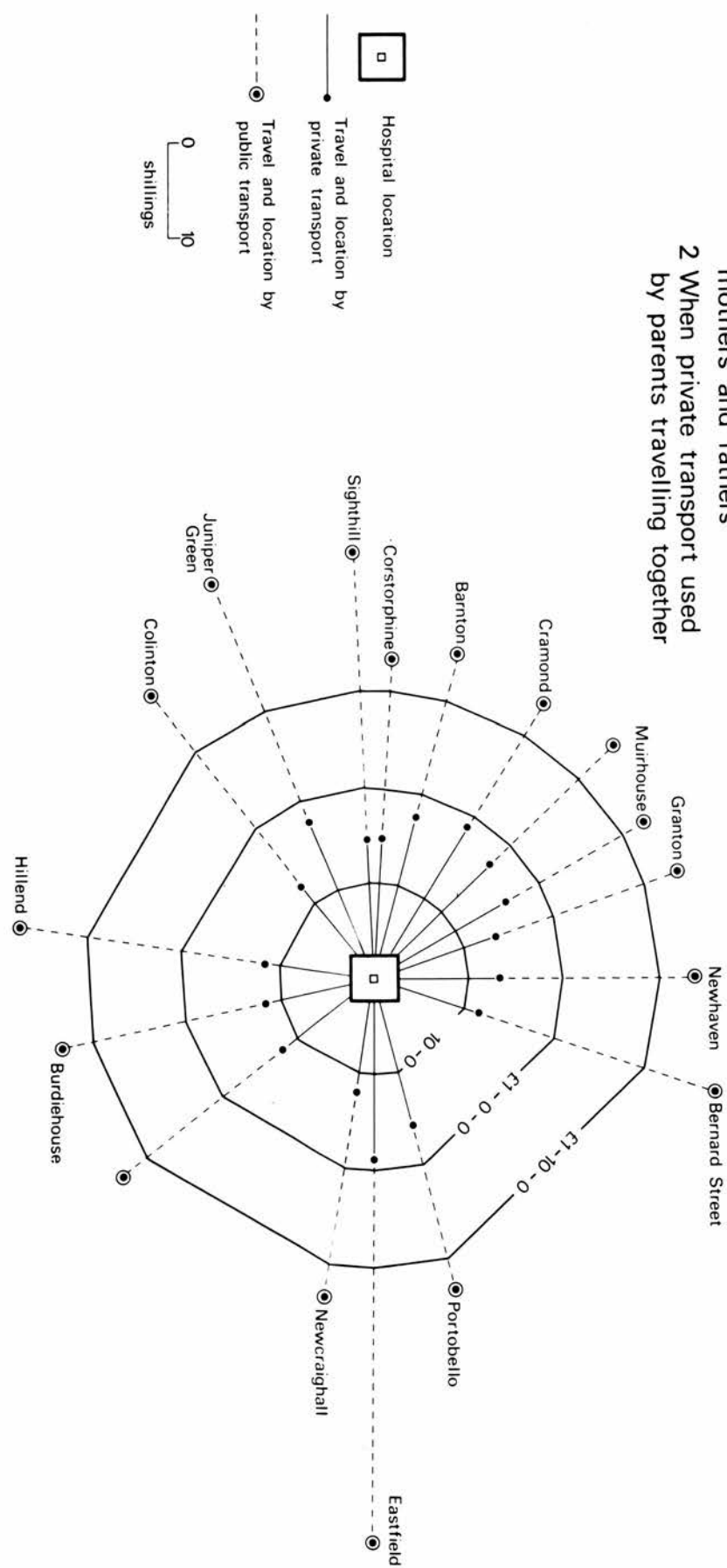
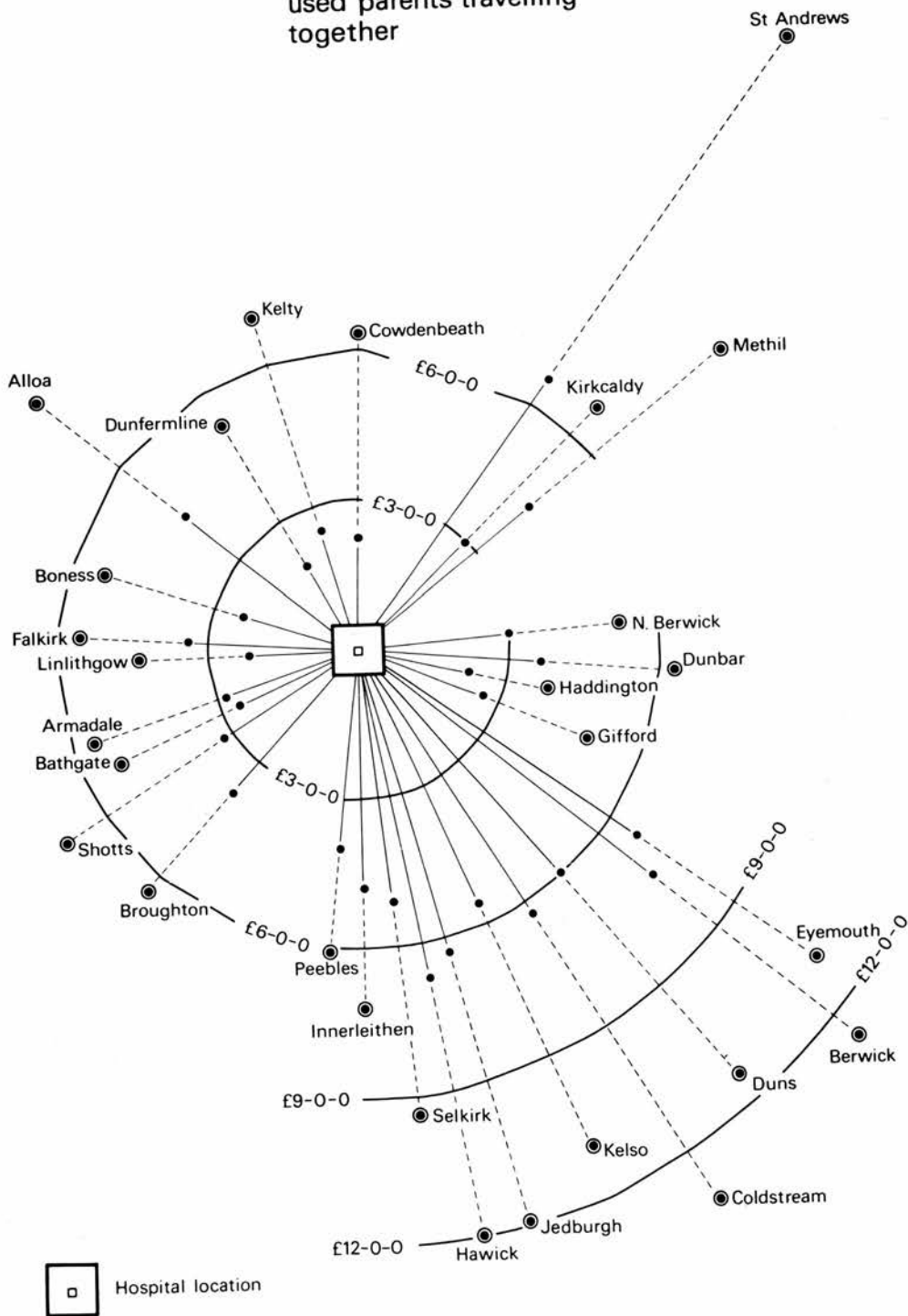


FIGURE 27

Relative weekly travel costs by private and public (bus) transport from selected regional locations

Assumed conditions : 1 daily visiting by mothers and fathers
2 when private transport used parents travelling together



be incurred by parents if visiting occurred under the stated conditions. These constructions are to be seen more as models to be used as a basis for discussion rather than statements of actual costs incurred by visitors in the present study. Weekly return costs have been used on the assumption that it is the overall expense involved in visiting rather than the cost for one particular journey which is of concern for most visitors. Both parents were included partly because, as the evidence presented earlier shows, both parents do often visit when it is convenient and partly because of the emphasis given in the Platt report to the desirability of patients retaining as much contact with their homes as possible during their stay in hospital.

Under these assumed conditions it will be seen that private transport would be considerably cheaper than public transport. This would arise from the fixed nature of running costs for travel by car, irrespective of the number of passengers carried, whilst for public transport journeys family travel costs would be directly related to the number of people travelling. It would thus be generally cheaper for middle class than working class parents to visit this hospital because the former are much more likely to use private transport.

From the evidence about visiting presented earlier it will be apparent that these diagrams do not reflect accurately the costs incurred. Thus in working class families from the outer catchment area daily visiting by both parents is not a common pattern. However, that cost of access may be a considerable

problem for families living at a distance is supported by an analysis of the financial help given to parents in one year by the Medical Social Work department at the hospital. (Tables 17 and 17a) Well over half of the families aided in this way were from distance zone 3 whilst the amount of money going to these parents amounted to 80 per cent of the total expenditure.

Valuable though this help is however in enabling some of the more distant parents to visit, the available provision is inadequate to meet the potential demand. Thus it is uncommon for parents to be given assistance for regular visiting; rather, the fund is used to enable parents to visit occasionally during a child's stay more especially in cases of serious illness. The opinion of the Senior Medical Social Worker¹ was that a substantially increased budget would be necessary if regular visiting even by the small number of families currently being helped were to be financed. The results presented in this study suggest that considerable numbers of longer distance families might require financial assistance but do not at present come to the attention of the Social Work department.

Again in the case of a large number of local families it is likely that travelling costs are in excess of those shown in Figure 26 as it is common for parents to visit more than once each day and several daily journeys may be made between home and workplace throughout a patient's stay.

Whilst it is stressed that the diagram maps do not clearly portray variations in actual visiting costs they nevertheless are

1. Personal communication.

Table 17

Financial assistance provided by Medical Social Work department, Royal Hospital for Sick Children, Edinburgh in 1969* to assist parents to visit - Number of cases in which parents were given assistance by distance zone.

Distance zone	No. of cases	Percentage of cases
1	17	21.5
2	11	13.9
3	45	57.0
Not Known	6	7.6
	79	100.1

Table 17a. Amount and proportion of assistance provided by distance zone.

Distance zone	Amount of assistance			Percentage of total assistance distributed
	£	s	d	
1	67	19	9	12.1
2	35	0	0	6.2
3	444	16	7	79.3
Not Known	12	16	0	2.3
	£560	12	4	99.9

* Finance provided from various sources.

useful in drawing attention to the relative order of costs that would be involved if parents were to visit their children daily as recommended by the Platt Report. They serve also to indicate that on grounds of travel cost as well as travel time the users of public transport may well find it much less convenient to visit this hospital than those who come by private vehicles. In short, middle class parents are likely to find it relatively cheaper to visit their children than working class parents and for many parents living at a distance cost of access may be an important factor in limiting their visiting.

Summary

Middle class parents were high users of private transport whilst working class parents mainly used public transport when going to visit. Differences in car-ownership levels between the two groups are largely responsible for this contrast but it is not the only factor, particularly in the case of mothers. Comparison of car-owning families only showed that it is common in middle class families for both parents to be able to drive. This is not the case in working class families where few mothers are able to drive. Thus, car ownership probably confers greater day time mobility on middle class as opposed to working class mothers.

It is suggested that both travel time and travel cost of access may well be greater for working class than middle class

parents because of the former's dependence on public transport. It is likely that a combination of relatively long travel times and high travel costs are two factors acting to reduce the amount of visiting made by working class parents living in zone 3.

CHAPTER 7

SOME IMPLICATIONS OF THE EDINBURGH SURVEY FOR GEOGRAPHIC SPATIAL THEORY

This chapter and the next one are devoted to discussions of some of the implications which arise from the Edinburgh visiting survey. Chapter 8 looks at the practical implications for medical care. This chapter examines the ways in which the Edinburgh study relates to contemporary geographic spatial theory. It will be helpful to begin with a brief résumé of the objectives of geographic spatial theory to provide a background.

Geographic spatial theory: objectives and trends.

Throughout this work the focus has been consistently upon the spatial interaction between centres providing medical care and the communities they serve. The adoption of this spatial viewpoint reflects the philosophical position taken by the author vis-à-vis the nature of Human Geography, namely, that it is a social, and increasingly, a behavioural science, oriented towards acquiring an understanding of man's activities in terrestrial space. As Morrill (1970) points out, other, equally valid viewpoints exist about the nature of human geography but it is with the spatial viewpoint alone that the present discussion is concerned.

Broadly speaking, the aim of spatial theory in Geography is to identify and understand the principles which govern man's spatial activities. The spatial structures that man builds and the spatial processes that are generated as a result, are fundamental objects of

study. Increasingly, so too, are the multitude of factors affecting man's perceptions of space. The ultimate purpose behind this search for an understanding of man's use of space is to achieve a better control of terrestrial space for the benefit of mankind.

Space and time have long been recognised as two of the most important dimensions which affect human existence. A better theoretical appreciation of how man reacts to space and time is thus crucial if he is to be able to explain spatial activities and hence widen his powers of prediction and control. Accordingly, a great deal of effort has been expended by geographers in seeking to increase man's understanding of two central geographic concepts, location and spatial interaction. A voluminous theoretical literature has developed around these themes and how they apply to the movement of people, goods and ideas in geographic space. In the last fifteen years especially there has been a growing emphasis on the theme of spatial model building - the development of spatial abstractions for purposes of prediction and control. Summaries of progress achieved in these directions are contained in Chorley and Haggett, 1967; Olsson, 1965; and Haggett, 1965.

However, despite the real progress that has been made in developing predictive and explanatory models of spatial interaction in the last two decades, it remains the case that our understanding of human behaviour in space is limited. Indeed, in the last few years there has been a growing awareness that much of the theoretical work that has been undertaken has notable deficiencies. Most significantly, there has been an over concentration on economic

principles as the over-riding ones conditioning human interaction. In addition human spatial activities have too frequently been viewed in a normative framework and the assumption made that human spatial decision-making is rationally based. Correspondingly, there has been a failure to give due weight to non-rational behaviour and to a spectrum of social and psychological influences on human activity (Olsson, 1965; Abler, Adams and Gould, 1971). These have been serious omissions in a discipline with an avowed aim of understanding man's use of space. If the theoretical understanding of human spatial activity is to be developed further and spatial models of more powerful predictive capacity for human situations devised then more attention to social and behavioural factors is a prime requirement.

Gould (1969) has provided a summary of some of the work which has emerged in response to this need in the last ten years under the heading of 'Behavioural Geography'. He recognises two particular research lines. One has considered behavioural aspects that are related to spatial movements and patterns and which have explicitly recognised the effect of behavioural constraints in geographic models. The other deals with the way in which decision makers' perceptions of the human and physical environment affect human decisions which have locational significance. Similarly, Pahl (1967) has shown how an understanding of different value systems in sub-groups of the population can help to explain patterns of residential locational choices. The Sociologists' model of social stratification may be a better tool to draw upon in an effort to explain some spatial patterns than the traditional geographic least-cost model. The overlap between

geography and subjects such as psychology and sociology is still a new development but it is already evident that such liaisons offer considerable scope for the advancement of human geographic theory.

How does the Edinburgh Survey link up with this existing and developing body of spatial theory? This question will be explored in the next section.

The Edinburgh Survey: Relations with geographic spatial theory.

There are two main ways in which the visiting survey relates to geographic theory. In the first place the central hypothesis that was tested, namely, that family visiting would decline with increased distance of residence from the hospital, was based upon the concept of lapse rates, a notion central to spatial interaction theory. Secondly, as well as the geographic variable of absolute distance, the non-geographic variables of social class and time of the week were also found to have considerable influence on the volume and patterns of visiting movement occurring from different distances. This point relates to the views of those Geographers who have urged that geographic theory needs to pay more attention to information from related social disciplines if it is to become a reliable predictor in human spatial situations. Each of these links with spatial theory will be discussed in turn.

1) The distance - visiting hypothesis

The attenuating effect of distance on spatial movement has been studied for almost a century. Empiric observations from a wide variety of human activities and at a variety of geographic scales

(local to international) have confirmed a relationship between movement and distance which has the general form:

$$\text{flows (in unit time)} = f(\text{distance})$$

The rate at which volume of flow falls off with distance is known as the lapse rate. Lapse rates¹ vary for different kinds of movement and with geographic scale but their existence in spatial interaction systems is probably a universal phenomenon (Haggett, 1965).

Because the concept of lapse rates is so well documented empirically it is reasonable to hypothesize the existence of such regularities when examining hitherto unexplored dimensions of spatial interaction systems. The Edinburgh survey was formulated around a hypothesis generated in this way. Prior to this study the subject of family visiting to hospitals had been unexplored from the geographic viewpoint. Consequently, an appropriate first step was to test the hypothesis that increased distance of residence from hospital would be associated with a decline in family daily visiting. The results obtained (see chapter 6) have confirmed this hypothesis in a general way. The finding that visiting does fall with distance lends further empiric support to the theory of a functional relationship between distance and human interaction, in this case from a hitherto unexplored social situation. Further, the survey results

1. The explanation for lapse rates is conceived in economic terms. Spatial movement depends upon the existence of a supply at one point and demand at another - the notion of 'complementarity'. Whether movement will occur, and, if so, how much, is determined by the frictional effects of distance, usually measured in terms of real money and/or time.

indicate that the geographic model of lapse rates can be used in a crude way as a predictive device. In this specific case of a paediatric hospital serving a regional catchment, geographic theory was a more reliable predictor of the existence of a visiting problem related to distance than the administrative theory expounded in the 1962 hospital plan. It will be recalled that the visiting survey was stimulated by the discussion of the District General Hospital concept in the plan. In particular, the triggering point for the study was the administrative assumption that under the envisaged larger catchment areas distance would not be a factor which would seriously affect community use of hospitals. In effect the administrative view assumed a minimal distance frictional effect which in the situation examined did not hold.

Though the Edinburgh study has indicated a fall off in visiting with distance however, it does not indicate in detail the nature of the lapse rate that exists. The use of 3 distance zones based on absolute distance was helpful in such an exploratory study as a means of drawing attention to the distance - visiting relationship but it is too crude an approach to allow of refined examination of the distance - decay function. For example, the inner zones used spanned 5 and 10 miles respectively but the outer zone extended in some directions up to 60 miles from the hospital. What is the shape of the distance decay curve in this outer zone? Does it contain any marked threshold? How does the distance decay function for the middle class vary to that for the working class? These are the questions which need to be pursued if the lead given by the results

presented in chapter 6 is to be developed with greater precision and with theoretical as well as practical implications for hospital planning.

A detailed analysis of lapse rates would indicate whether marked thresholds exist or whether the fall off is more continuous in form. Either way, judgements about the functional range of the catchment which would be reasonable in terms of family daily access could be made. The results in chapter 6 indicate some of the criteria that it would be useful to include in such lapse rate analyses. The different transport dependency patterns of the middle and working classes has suggested that the travel time dimension of the catchment will not be the same for each group. Consequently, separate decay-functions based on travel time rather than absolute distance would be expected to give greater insight than a single function plotted for the population as a whole. Again, the weekday-weekend differences in visiting patterns indicate the need for decay-function analysis to take account of time differences. The decay function for working class visiting during weekdays would perhaps be the most significant indicator to use for the assessment of functional range. This group is not only the largest section of the community who would have occasion to use the hospital, it is also the one most dependant on public transport and hence most likely to be affected by the frictional effects of travel time and cost.

There is a need to undertake similar analyses from hospitals elsewhere. The Edinburgh survey was an isolated study and it needs to be supplemented by work from situations of different population

densities and varying areal extent of catchments. From the community access point of view decay functions need to be examined for groups who might be expected to have different mobility characteristics. What might be acceptable as a functional range for healthy young adults visiting their children may bear no relation to that which would be suitable for the elderly visitors to geriatric in-patients. Further studies of this kind could also lead to validation and refinement of spatial theory as well as making useful contributions to medical care planning.

ii) Behavioural and social aspects of the distance - visiting relationship

The second way in which the visiting survey relates to modern spatial theory is through the variable of social class which is an index of important social and behavioural differences existing between groups in society. Social class¹ is a concept which has

-
1. In all societies people are differentiated into categories to which varying degrees of social importance are attached. In industrial societies the division of people is in large measure a function of the economic and productive system. Consequently, in such societies occupation is usually used as the basis for social classification. Susser and Watson sum up the rationale of the social class concept as follows:

"Some occupations demand greater skill, longer training, and higher education than others and are better rewarded. These factors are significant in determining the social prestige given to an occupation, and are connected with income, education, residence, social esteem and mode of life. Persons of similar occupation tend to share a common experience and mode of life, and may be categorised as members of the same social class."

The most widely used scale of classification in Britain is the Registrar General's based on the recording of occupation in the census. 5 social classes are recognised. These are:

- I Professional etc. Occupations
- II Intermediate Occupations

[Contd.]

proved itself of considerable practical and theoretic utility in sociology and related social sciences, yet it has been largely ignored as a variable of spatial significance by human geographers (Pahl, 1967). However, Pahl (1965) in his study of residential patterns in the urban/rural fringe of the London Metropolitan Region, has shown convincingly that there are certain spatial systems which cannot be understood without an appreciation of the radically different value systems and life styles which are held by the middle and working classes. This view, that there are values other than the least cost one, which need to be considered in questions of locational significance, is a particular instance of the general point made earlier in this chapter that social and behavioural facets of spatial systems must be taken into account if a convincing spatial theory with predictive power for human situations is to be developed.

How important is social class in understanding the distance-visiting relationships and what can be learned that may have relevance for geographic theory? In answering these questions it will be helpful to begin by describing a simple interaction model of the main factors influencing the visiting patterns.

Three independent variables were identified as being related to variations in visiting. These were absolute distance, social class and time of the week. Fig. 28 summarises how these factors

Contd.]

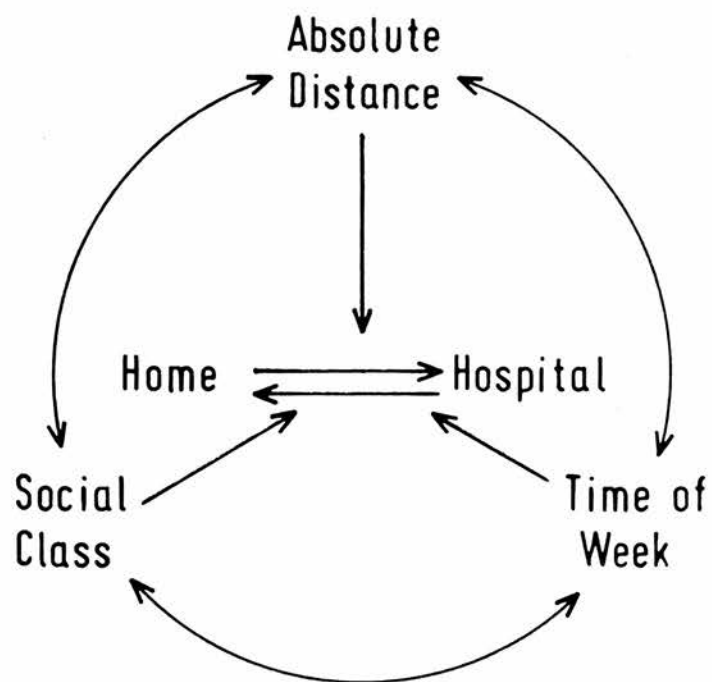
III Skilled Occupations) - sometimes split as)	
in the Edinburgh) III Non manual
study into) III Manual

IV Partly skilled Occupations

V Unskilled Occupations

In the Edinburgh survey the middle class comprised I/II and III N.M., and the working class IIIM, IV and V.

Fig.28. RELATIONSHIPS BETWEEN THE FACTORS
IDENTIFIED AS AFFECTING VISITING



relate independently to the spatial movement under study. In addition, it will be seen from this model that the amount of visiting is affected by the way these factors inter-relate. Chapter 6 was largely given over to a consideration of how the distance factor affected visiting. The intention now is to look more closely at social class and time of the week to see how these two factors help to account for variations in visiting from different distances.

In exploring these relationships it will be useful to refer to the data in Table 18 which has been extracted from Table 2 Appendix R. The figures show the amount of visiting by mothers in the two social class groups for weekdays and weekends. These variations are shown for the three distance zones.

Table 18. The relationship between social class, time of the week and visiting from longer distances.

MIDDLE CLASS: Mothers Weekdays					WORKING CLASS: Mothers Weekdays			
Zone	% Days used	Expected Value	Differ- ence in %	% Differ- ence due to dis- tance	% Days used	Expected Value	Differ- ence in %	% Differ- ence due to dis- tance
1	88.4	-	-	-	61.7	-	-	-
2	85.4	-	-	-	60.3	-	-	-
3	55.6	85.4	29.8	<u>34.9</u>	29.5	60.3	30.8	<u>55.1</u>
Weekend Days					Weekend Days			
1	90.7	-	-	-	63.3	-	-	-
2	97.6	-	-	-	72.6	-	-	-
3	73.0	97.6	24.6	<u>24.6</u>	55.7	72.6	16.9	<u>23.3</u>

It can be seen that there is virtually no fall off in visiting from zone 1 to zone 2 in either social class group during weekdays and none at the weekend. But a marked fall occurs between zones 2 and 3 in both groups at all times. How are these two social class groups in zone 3 affected by distance during the week and at weekends? The impact of distance on the visiting fall off can be crudely judged from the data contained in the table. But because the principal distance effect occurs in zone 3 the results in Table 18 refer only to the variations in visiting between zones 2 and 3. It is important to underline too that because of the assumptions that are built into the following argument the figures arrived at are valid as indicators only and not as hard and fast results.

The relative effect of distance on the visiting fall off in the two social class groups can be assessed by the following procedure. Assume first that the distance frictional effect is zero for each social class group for zones 1 and 2. Any unrealised visiting from zone 2 (15% for middle class, 40% for working class) is thus assumed to be attributable to social and behavioural factors. If distance had no effect on visiting in zone 3 and social and behavioural constraints operated to the same extent as in zone 2 then expected visiting amounts should be the same in the two zones (see expected values in Table 18 for zone 3). In fact, in both social class groups a marked fall in visiting occurs between zones 2 and 3. By expressing the actual fall in percentage as a proportion of the expected value, a crude estimate of the distance effect can be made for each group:

For example, for middle class mothers:-

$$\frac{\text{Expected \% of opportunities used}}{\text{Difference between expected and actual values}} \times 100 = \text{fall due to distance}$$

Thus:

$$\frac{85.4}{29.8} \times 100 = \underline{\underline{34.9\%}} \quad ? \quad \frac{29.8}{85.4} \times 100 = 34.9$$

The results of these estimating procedures are given in Table 18 from which the following conclusions can be drawn:

1. During weekdays increased distance is associated with a strong fall off in visiting in both social class groups.
2. During weekdays the fall off is much greater in the working class than in the middle class.
3. At the weekends there is also a marked fall off in visiting with distance in both social classes but it is less than during the week.
4. At weekends the decrease in visiting with distance is equal in both social class groups.

Social class and time of the week clearly inter-relate to cause marked variations in visiting from different distances. In looking at possible explanations for the observed differences the effect of time of the week will be considered first.

Time of the Week

Consider the stronger effect of distance in reducing visiting during weekdays as against the weekend period in both social classes.

Explanation of these time differences of visiting may possibly hinge to a large extent upon changes in the social circumstances of the family between weekdays and weekends. The normal weekday family pattern would be for the father to be at work during the day time whilst the mother's role would include attending to the home and the needs of any other members of the family. The task of visiting a child in hospital at these times would in most cases probably fall as an extra duty upon the mother, who would thus be faced with fitting an extra and time consuming activity into her daily life pattern. Normally then, during weekdays, the mother would have to adjust to this situation herself. In any seven day cycle weekdays are the times of least family domestic flexibility. At these times too there is a strong likelihood that any private transport owned by the family, and especially by working class families, will be in use by the father for access to work. In these circumstances the time involved in travelling to hospital when set against other domestic commitments may be an effective deterrent to a high level of daily visiting for both social classes.

The weekends, by contrast, are times of maximum domestic flexibility in most households. Children are not returning from school at various times of the day. Fathers are less likely to be at work. There is much greater free time available in which to fit extra activity. In addition, a change in mobility potential probably occurs in many families as cars become available. As a result of these changes in social situation the time necessary for visits to hospital by a parent may more easily be made available whilst in

many cases the actual journey time itself may be shortened because of the presence of car transport. For all of these reasons distance to hospital probably poses less of a problem for families at the weekend. The frictional effect of distance on visiting at these times might, as a result, be lower than during weekdays.

Social class

It has been noted above that although both social classes were affected by distance to the same extent at weekends, the frictional effect of distance affected the working class to a greater extent than the middle class during the week. At these times the working class mothers are probably less well equipped to respond to distance than their middle class counterparts because of a range of social and economic factors. Some indication of these factors is available from the present investigation. Thus, the working class mothers have a greater reliance on public transport (page 170) so that travel time is likely to be significant. Cost of long travel is also known to be a problem (page 190). It was not possible to tell how other social factors such as claims of other dependant children or a lack of day nursery facilities in working class areas increased the domestic pressure on working class mothers during the week but questions such as this would be worth further study.

Table 18 also draws attention to other interesting social class differences in visiting which raise a number of questions. There is only a small difference in visiting between the zone 3 middle class mothers and the local working class mothers during weekdays

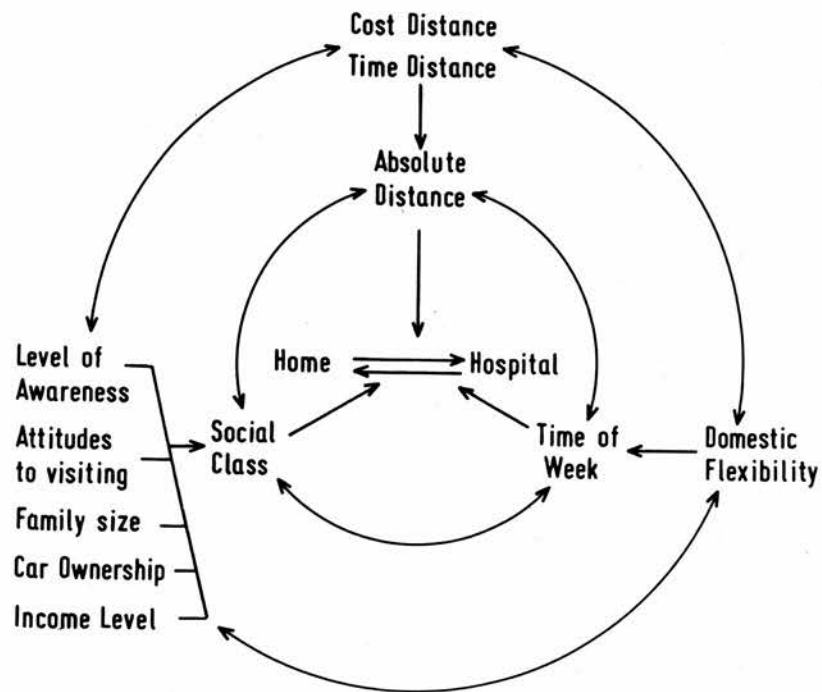
(55.6 per cent as against 61.7 per cent of opportunities used). At weekends these longer distance middle class mothers visit substantially more than working class mothers from zone 1 (73.0 per cent and 63.3 per cent respectively). These patterns show that the longer distance middle class mothers overcome considerable frictional effects of travel time and travel cost to visit almost as much as, or more than (depending on time of the week) the local working class mothers for whom distance frictional effects can be assumed to be at their lowest. Why does this happen? Why is so much (40 per cent) local working class movement unrealised? Do the working class mothers have different attitudes towards supporting a child in hospital? Are the middle class mothers more strongly motivated perhaps through being more aware of the value of visiting? Issues like these were not part of the remit of the present enquiry but they may have had considerable bearing upon variations in visiting between the two groups.

From the point of view of geographic spatial theory what can be learnt from this examination of the way that time of the week and social class relate to visiting variations? Earlier in this chapter it was stated that a better theoretical appreciation of how man reacts to spatial opportunities is crucial if he is to be able to explain spatial activities and widen his powers of prediction and control, in human situations. The present discussion has suggested that in the interaction system under study here, the spatial response of individuals result from the interplay of social and behavioural, temporal and geographic influences. Fig. 29 is an attempt to

Fig.29. MODEL OF FACTORS AFFECTING VISITING VARIATIONS

Outer Ring: Suggested explanatory variables

Inner Ring: Analysis variables



summarize some of the explanatory variables which might lie behind the independent study variables and which have combined to produce the variety of observed movements. No claim to completeness is made; it is merely an attempt to conceptualise the types of factors involved in the relationships discussed above. Nevertheless the model serves to underline what is perhaps the central point of this chapter. The volume and patterns of movement within the particular spatial system under study cannot be fully understood by restricting the analysis to a consideration of strictly geographical variables. In accounting for the variations in visiting from different distances it is essential to draw upon the sociologists' model of social stratification and to take account of time variations. Pahl (1967) has argued elsewhere that geographers must seek to understand the concept of social class because the different value systems held by sub-groups of the population is an important factor affecting residential locational choices. The present study also suggests that different value systems, varying family circumstances and differences in material living standards between classes may also affect spatial movement on a daily basis between home and hospital.

This chapter has examined two aspects of the Edinburgh study in an attempt to see how they relate to current spatial theory. The first of these, the distance-visiting hypothesis was successfully tested, thus lending further empiric support to the concept of distance - interaction lapse rates. The demonstration of a fall in visiting with distance emphasised the value of using this geographic concept as a predictive device in this exploratory study. The

geographic model was not used to indicate the lapse rate problem in a refined way however, because, whilst the importance of non-geographic variables to the movement patterns was suspected, their effect could not be specified with any precision prior to the study. In this case social class and time of the week have been shown to have distinct effects on the amount and the patterns of spatial interaction that occurred. Clearly, if geographic theory is to be of utility in relation to situations of the kind under review in the Edinburgh study it needs to take note of the impact of such non-geographic variables.

These results would seem to reinforce the views of those authors who have recently begun to steer Human Geography towards the common ground that exists between it and the sociological and behavioural sciences. Spatial geographic theory can only be strengthened as a result of overlap with these fields; without further development in this direction it will be unable to evolve as an instrument of powerful predictive value in relation to human activities in space.

CHAPTER 8

SOME PRACTICAL IMPLICATIONS OF THE EDINBURGH SURVEY
FOR MEDICAL CARE

This chapter examines some of the practical issues raised by the results of the Edinburgh survey for a range of medical care situations. The discussion will be centred first on a number of questions pertaining to the welfare support of children admitted to the Royal Hospital for Sick Children in Edinburgh and elsewhere where paediatric in-patients are hospitalised at a considerable distance from home. Subsequently it will be argued that there is much of relevance in the Edinburgh survey which can be usefully applied to the question of how best to care for other groups of in-patients. For example, policies for the care of mentally subnormal, psychiatric and geriatric patients in particular, have been heavily influenced in the past two decades by an increasing awareness of the part that social factors can play in the disease process. As a result it is now more widely recognised than hitherto that maintenance of contact with the patient's family, relatives and friends whilst he is in hospital is of considerable importance not only to his morale and therapeutic progress as an in-patient but also to his successful rehabilitation and after care in the community. For this contact to be possible, hospitals must be accessible to the communities they serve. In this respect the discussion considers how far distance poses a problem under the present pattern of hospitals. Finally, the official proposals for the creation of a national network of district hospitals is critically discussed from the related

geographic and family viewpoints which have been central to the visiting survey. A model of the hierarchy of hospital services proposed in the report on The Functions of the District General Hospital, will be examined. The trend towards the creation of larger catchment areas and a concentration of all major specialities on large centralised hospital sites, as envisaged by the Bonham-Carter report, emphasises the need for urgent enquiry into the relationships between distance and family movement to hospital in a much wider range of situations than the Edinburgh survey was able to consider.

Implications for paediatric care at the Royal Hospital for Sick Children, Edinburgh.

The principal point emerging from the visiting survey was that children admitted to the Royal Hospital for Sick Children, Edinburgh, from beyond 15 miles, formed a markedly undervisited group. What practical measures can be undertaken to alleviate this situation which, as the recent circular from the Department of Health¹ has reminded hospitals, is undesirable?

Realistic suggestions about how to overcome this problem demand that some assessment be made about the size of the undervisited population in the hospital as a whole. This is very difficult to do with a high degree of accuracy from the original study because of its limitation to medical in-patients only. Visiting to patients in the surgical wards may be either raised or decreased in

1. Department of Health and Social Security (1971). Hospital Facilities for Children. Annex to H.M.(71)22.

comparison to that in medical wards by factors such as parents' reactions to the nature of the patients' illnesses and the treatment necessary. In the absence of such information however, the only reasonable assumption to make is that the geographic and social influences which have been shown to operate with such marked effect on medical in-patients are likely to apply with more or less the same force on patients in other units.

If this assumption is made then the following calculations give some idea of the size of the annual problem in the hospital as a whole. Figures are used for 1969 as this is the last year for which complete data was available. In that year there were approximately 6,750 discharges. Applying the fraction of the survey sample (23%) who came from beyond 15 miles to this figure gives about 1,500 admissions from the outer catchment in a year. If the social class figures for the Edinburgh sample also hold for these 1,500 admissions the distribution would be as follows:

I/II/III N.M

400 - 500

III M/IV/V

1,000 - 1,500

Similarly, if the age distribution of the Edinburgh sample is applied the following figures are obtained:

0 > 6 months


6 months > 5 years

5 years and over

350 - 400

650 - 700

450 - 500


1,000 - 1,100

As the calculations involve a number of simplifying assumptions the actual numbers in the hospital as a whole falling into each group

will probably differ to some extent from these estimates. The figures however are useful in indicating that the problem of under-visiting is likely to be a considerable one affecting relatively large numbers of middle, working class and younger age patients. How can an undervisiting problem on this scale be tackled?

The first question to be asked is how many of the patients admitted from the outer catchment need be brought into this hospital?

It is a well established fact, that for a variety of reasons, many adult and paediatric patients are hospitalised unnecessarily in that they are not in need of the specialist skills which hospitals can provide. (Office of Health Economics, 1970; The Welfare of Children in Hospital, 1959) Referring to this situation the Platt Report made strong representations about unnecessary admissions because of the stressful situation it involves for the child:¹

"Children, particularly very young children, should only be admitted to hospital when the medical treatment they require cannot be given in other ways without real disadvantage. This may seem obvious but it is a consideration which should always be in the minds of those responsible for the admission of children to hospital and evidence submitted to us suggests that it is still often overlooked...."

Whilst the question of children being admitted without good reason is thus a question of general application in paediatrics, it applies with added force here to all those children admitted from beyond 15 miles. Each admission in this group has a high risk of

1. The Welfare of Children in Hospital. Para. 17. Page 5.

going without adequate parental support and, in the case of younger children especially, of undergoing emotional disturbance. The first and most important implication of the Edinburgh survey therefore is for further research by medically qualified workers into the reasons for admission of these longer distance cases. If there are patients who are admitted unnecessarily it would be important to try to arrange for alternative forms of care to be given (e.g. general practitioner care, out-patient or in-patient day care) which would obviate the need for separating patient and family by admission to hospital.

Approaching the problem of the undervisited child in this way is likely in the long term to be the most appropriate answer for a number of reasons. If children could be kept out of hospital it would avoid the risks of stress which hospitalization entails for the child and it would also lead to cost reductions in the National Health Service by substituting less expensive forms of medical care for in-patient care which is the most costly form of medical care available.

However, identification of unnecessary admissions and the implementation of suitable alternative forms of care for these cases will not be achieved overnight. This approach must be seen as a medium term or even longer term measure as it will require considerable readjustments to current medical care practices. To quote only one instance, referral to hospital by a general practitioner may occur because there is not the necessary diagnostic equipment available near the patient's home. Little progress could be made in such

situations without making available better facilities, for example, through the development of a health centre.

In the short term the problem of undervisiting to longer distance cases can best be approached by seeking for, and trying to apply, appropriate measures which might enable parents to visit more frequently. This strategy would be of long term significance also because even though it may be possible to keep some long distance cases out of hospital many will still be referred to this regional hospital in need of the specialist skills it can provide.

The promotion of greater daily visiting can be approached immediately and directly as a result of the information provided by the Edinburgh survey. The group of parents who can be most easily helped are those who are in need of financial assistance. This is one problem which the hospital is able to meet, at least partially, through the various sources of official and voluntary funds that are available for such purposes. There is however, a need to devise a built-in routine method for identifying the relevant families so bringing them into contact with the medical social work department at the hospital. The present system by which this is done is unsatisfactory. The attention of the medical social worker is usually drawn to the fact of undervisiting after an absence of visiting has been noticed by the ward sister during the first two or three days of the child's stay. Any financial help which the medical social work department can give to aid visiting may thus be applied too late to alleviate the initial stresses of hospitalisation upon the child. A simple means of identifying children at risk to undervisiting needs to be applied during the admission procedure. The results of the visiting survey show how this could be done.

The routine information taken at the admission of the child includes the home address. This information allows the nursing staff to recognise patients who live more than 15 miles from the hospital. All that is needed is a simple reference frame in the front cover of the ward admission book. Such a frame would consist of a list of those county areas which lie wholly or in large part beyond 15 miles from the hospital. Picking up these patients at admission should be an easy task. But routine referral to the medical social work department from this point would raise a number of difficulties. The hospital has only a limited amount of finance available for helping parents to visit and the medical social work department is convinced that routine referral of longer distance cases would produce a demand for help with which they could not cope.¹

The estimates of longer distance cases given above would lend support to this view. Moreover, routine referral would also result in the uncovering of a number of needs which the hospital itself would be unable to meet. For example, a mother may feel that the provision of a childminder to look after other young children at home so enabling her to visit, might be an appropriate form of help. It will be apparent then that because of the scale of the undervisiting problem and the nature of some of the needs that will have to be met if visiting is to be increased, the hospital cannot solve this problem acting alone. The progress that has been achieved by the hospital as a result of the implementation of open visiting hours

1. Personal communication - from the Medical Social Work Department.

and the adoption of a liberal attitude to the use of the parents' visits fund by the hospital secretary in recent months¹ (partly as a result of the visiting survey reported in this work) needs to be supplemented from other sources in the community if undervisiting of the scale suggested above is to be overcome.

In an effort to promote this kind of hospital-community liaison a follow-up study is being implemented. An outline of the follow-up study is given in Appendix T. Co-operation has been secured from the Hospital Management Committee and the Directors of Social Work in four local authority areas lying wholly outwith a 15 mile radius from the hospital. There are three objectives to the study. First, to see if the nature of any difficulties which will interfere with parental visiting can be identified at admission. Second, to see if these problems can be met from the combined resources of the hospital and local authorities. Third to assess whether the patient might have been kept out of hospital, had alternative forms of care been available. This last point is important. To achieve the first two objectives on a large scale may involve considerable costs. If so, and if they are applied to the support of patients who are not strictly in need of specialist in-patient services then the patient support scheme may prove a costly addition to an already expensive in-patient system. The ideal system to aim at would be to admit only patients in need of the specialist services in this regional centre and to have available

1. Personal Communication: Medical Social Work Department.

a family support service for parents with visiting difficulties. The follow-up study should provide useful information on both these points as they apply to the longer distance cases. In addition, the results should have implications for a regional and possibly national scheme of co-operation between hospitals and local authorities aimed at ensuring that longer distance children are visited as frequently as those who live close to the hospitals to which they are admitted.

No matter how successful such a programme might be in promoting further visiting however, it can never be completely so in that a minority of children will come into hospital in circumstances which effectively preclude daily visiting. For example cases occur where a parent is hospitalised at the same time as the child; more commonly, in this particular hospital, some patients are admitted from the Highlands and Islands to the specialist units which serve a national catchment. In these circumstances the hospital itself may be able to provide a temporary substitute mother by adopting a policy of case-assignment nursing.

Wider paediatric implications

Up to this point the practical implications arising from the Edinburgh survey have been discussed mainly in relation to the visiting of in-patients at the hospital chosen for study. It is reasonable to hypothesise that similar patterns of visiting in relation to distance will exist wherever children are sent long distances to hospital. A principal implication from the results

of the Edinburgh survey must be for studies of a similar kind to be repeated elsewhere where extensive catchment areas are served by paediatric hospitals or paediatric units in general hospitals. The identification of under-visiting to long distance cases in whichever hospital it may occur would, for the short-term care of patients, raise the same kind of issues and questions which have been discussed above. But, in addition, if confirmation of the Edinburgh survey results could be acquired from other hospitals it would have significance for the long term planning of paediatric services.

Scotland offers unique opportunities for exploring the relationships between distance and family access to paediatric hospitals as specialist paediatric care is heavily concentrated in the regional centres. Thus, in the North East Hospital Board Region 86 per cent of the available paediatric beds (191 out of 223) are located in the Royal Aberdeen Children's hospital which draws patients routinely from distances of 40 to 50 miles from the counties of Moray, Nairn and Aberdeen. Moreover, the lack of specialist paediatric facilities anywhere to the north and west of Aberdeen means that patients are drawn from parts of the North of Scotland lying wholly outwith the North Eastern Region. Similarly, the fact that full time paediatric surgical staff are only found in the major paediatric hospitals in Glasgow and Edinburgh means that these hospitals serve a national hinterland for some specialties. Clearly, in such situations daily visiting by parents is out of the question and the issue of how to maintain contact between the child in hospital and the parents is an important and difficult problem. It

can be seen then that the current organisation of paediatric in-patient care in Scotland offers many avenues for further research into the problems that are raised for families as a result of their children being referred long distances to hospital. The Edinburgh survey has merely scratched the surface but it has opened up a neglected area to further enquiry.

Implications of the Edinburgh survey for visiting to in-patients in other specialties.

Paediatrics is not the only medical specialty to have recognised the importance of maintaining contact between the in-patient and his family, relatives and friends. In the past two decades it has become increasingly recognised that maintaining community links in this way, especially in the fields of psychiatric, psychogeriatric, geriatric and mentally subnormal care, can do much to ensure the successful rehabilitation of the patient in the community following in-patient treatment. Space does not permit of a detailed review of this situation as it applies in each of these specialties. The theme will be illustrated by referring to the care of subnormal and psychiatric patients.

The Mentally Handicapped

The most recent and comprehensive statement of the principles which should govern the care of the mentally handicapped is provided in the document "Better services for the mentally handicapped"¹ from

1. Department of Health and Social Security (1971) "Better Services for the Mentally Handicapped" Cmnd. 4683. H.M.S.O.

which much of the following material is taken.

During the past thirty years there has been a marked growth in knowledge about the extent to which people with mental handicap may respond to stimuli provided by social activity and educational and training opportunities. This has led to a radical shift in public attitudes towards the mentally handicapped and in official thinking of how best to provide the necessary services for this group.

Formerly, a policy of social segregation was considered best. People with mental handicap were cared for in institutions or colonies which were often placed some distance outside the nearest towns. The guiding principle was to provide the inmates with comprehensive care cut off from the rest of society.

The Royal Commission on Mental Illness and Mental Deficiency, reporting in 1957 recommended that the policy of social segregation be replaced by one oriented towards community care. The mentally subnormal should be integrated into community life as far as was possible and the provision of small hostels, residential homes and training centres was recommended as a contribution to this end.

The 1971 report "Better Services for the Mentally Handicapped" is firmly based on principles laid down by the 1957 Royal Commission. A central principle must be that: "Each handicapped person needs stimulation, social training and education and purposeful occupation or employment in order to develop to his maximum capacity and to exercise all the skills he acquires, however limited they may be." It is emphasised that the mentally subnormal patient should be seen as a member of a family unit and on the specific question of

admission to hospital the report recommends that the patient should continue to have contact with his family.

Thus:

"Each handicapped person should live with his own family as long as this does not impose undue burden on them or him, and he and his family should receive full advice and support. If he has to leave home for a foster home, residential home or hospital, temporarily or permanently, links with his own family should normally be maintained."

Some of the traditional deficiencies which have affected the in-patient care of subnormal in-patients are pointed out. It is maintained that changes are needed if, following a spell as an in-patient, a mentally handicapped individual is to be successfully rehabilitated into the community.¹

"More individual attention to the social, medical and nursing needs of individual patients is known to be needed. Contact with the world outside the hospital and with patients' families, is known to be beneficial."

The importance attached to the need for keeping family and patient in contact should hospitalisation be necessary is underlined in the report by its reference to longer term admission:-²

"If and when the time comes for a handicapped person to leave the family home and enter residential care or hospital for more than a temporary stay, this should be planned well in advance so as to cause the least possible distress to the family and upset to the handicapped person. The full co-operation of the family will be needed to help him to settle in his new environment. Ideally this will be close to his family home. But, if it is not, additional practical help may be called for in the form of transport, or sitting in services for other children to allow the parents to visit."

1. Ibid.

2. Ibid.

In summary then, present and future policy for the care of the subnormal should be directed towards care in the community wherever possible. In contrast to the historical emphasis on social segregation it is the declared aim now to foster social contact as a contribution to the welfare of mentally handicapped people. If a mentally handicapped person is admitted to hospital his needs for contact with family, relatives and friends should continue to be recognised and measures adopted to encourage visiting where this is necessary.

Psychiatry and Psychogeriatrics

The past twenty years has also seen a marked shift in emphasis away from institutional treatment for psychiatric patients towards care by community health services (local authority clinics, domiciliary practitioner care, day hospitals, out-patient clinics). Rehin and Martin (1968) have summarised the factors which have brought about this move away from the traditional pattern of providing custodial care for the incurably insane in geographically isolated asylums. Pharmacological and biochemical progress have provided valuable therapeutic techniques but, in addition, there has been an increased awareness that the course of a patient's illness is affected by his social milieu as well as by medical treatment.

This greater understanding of the importance of social relationships both in the aetiology and the rehabilitation from various forms of psychiatric illness has led to a shift in the psychiatric focus during the last twenty years from the patient

himself to the patient and his relationship with himself, his family and the wider society in which he lives. Howells (1963) and Heimler (1967) have provided outlines of the rationale of approaching neurotic illness via the avenue of family psychodynamics.

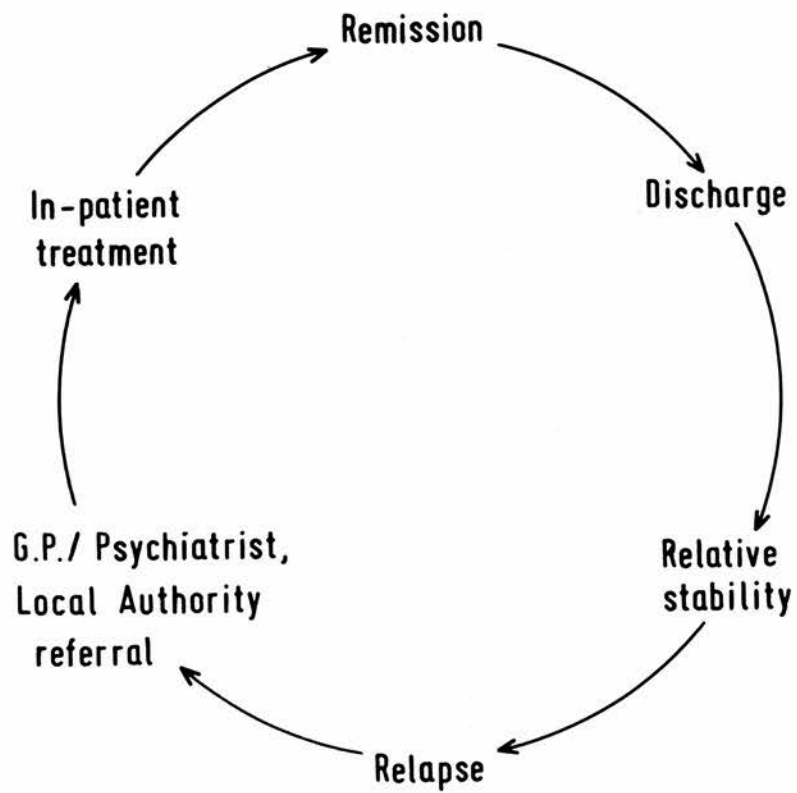
In view of these developments, how important is it to keep the psychiatrically ill patient in touch with those closest to him if he is admitted to hospital? In attempting to answer this question it will be helpful to refer to the cyclical model of much chronic psychiatric illness as proposed by Rehin and Martin (1968). From the model on page 228 it can be seen that the aim of in-patient care is to rehabilitate the patient successfully as far as it is possible whilst the aim of psychiatric community care is the prevention of relapse after discharge. The aims of both processes are clearly interdependent. Heimler has underlined the valuable role that contact with relatives and friends has in ensuring that during the in-patient stage of care a satisfactory basis for successful after care is provided. Above all, such contact can do much to offset the danger of institutionalization the prevention of which is seen as being one of the major aims of the therapeutic community:-¹

"The positive angle on institutionalisation is to see that the patient's links with his family and friends, with his workmates and neighbours are not entirely broken when he enters hospital; alienation from family and community is at the roots of institutionalization."

Moreover:

1. E. Heimler. Mental Illness and Social Work (1967), 70-71.

**Fig.30. CYCLICAL MODEL OF THE PROGRESSION
OF A CHRONIC PSYCHIATRIC CASE**



"A much more positive attitude towards relatives is needed. An explanation at the outset of the nature of the patient's illness, some indication of the probable duration of his stay, encouragement to visit him, and preparation for short visits home, help to encourage visitors to keep contacts alive.

If the family does not visit and the patient becomes cut off from the world outside, he often becomes apathetic and slides deeper into hospital routine until it becomes his whole life."

Whitehead (1970) has expressed similar views in his account of the approaches used at Severall's Hospital, Colchester, Essex towards the in-patient treatment of elderly patients suffering from mental illness.¹ Continued contact with relatives and friends is considered to be important for the welfare, the therapy and successful rehabilitation of the psychogeriatric in-patient. There is then, a growing awareness in psychiatry of the need to promote contact between in-patients and those nearest to them. This awareness is being reflected in efforts being made by a number of hospitals to promote the active involvement of relatives and friends in the therapeutic situation.

It would be wrong however to argue that fostering close contact with relatives and friends is always desirable. Brown (1963) for example, has shown that some schizophrenic patients have a greater chance of staying out of hospital if they are not returned to their parents or wives. Nevertheless, it is increasingly being advocated that greater social contact between the psychiatric in-patient and those who know him is desirable and this represents a significant current trend in psychiatric practice.

1. A. Whitehead. In the Service of Old Age (1970) Pelican Books.

Enough has now been said to establish that keeping the in-patient in touch with his closest associates is now recommended as a therapeutic and preventive measure in at least three medical specialties: Paediatrics, psychiatry and the care of the mentally handicapped. The fact that this is a relatively recent development is significant. It is reasonable to expect that our understanding of the importance of the chain of hospital-family-patient contact in medical care will continue to grow. The development of chronic intermittent haemodialysis, for example, has raised important social issues which necessitates frequent family contact with hospital. It is important that those closest to the patient attend hospital to learn about the management techniques so that they can assist the patient during home dialysis sessions. There is accumulating evidence¹ that many of these people have real personal fears about the machinery and their attendance at hospital is necessary so that they can be helped to work through these fears successfully. Again, from paediatrics, there are situations where contact between hospital staff and parents may be vitally important for the effective management of the child's condition after discharge. Control of dietary regime is important in conditions such as coeliac disease, phenylketonuria and diabetes. In other conditions parents may have to learn to administer drugs or physiotherapy as in cases of cystic fibrosis, cerebral palsy or epilepsy.

Increasingly then it is becoming evident that there are

1. Personal Communication from the Medical Social Work Department, Royal Infirmary of Edinburgh.

sound medical and social reasons why families should have convenient access to hospital. Yet the literature review at the beginning of this work has shown that very little is known about how geographic factors affect the family use of hospitals. The Edinburgh study has opened up this area to investigation and revealed that for large numbers of families, distance to the Sick Children's Hospital in that city poses a serious problem. How general are distance problems of this kind in relation to hospitals currently in use and those that are envisaged under the Bonham-Carter proposals?

This question is of enormous scope and in the absence of specific research evidence no hard and fast answers can be given. Because of the importance of the question for present and future medical care policy however, it is desirable to try to summarise what is known even though the discussion can only be framed in the most general of terms. At least such a procedure will draw attention to the gaps in our knowledge which in turn will open up more avenues to enquiry. The question will be easier to explore if the present and projected situations are considered separately.

Distance and family access to hospital today.

A general understanding of this relationship can be gained in three ways. The experience of the old mental and subnormal hospitals can be considered as these were often of considerable size, served large catchment areas, and, in addition, were often located so as to be difficult of access. Next, some individual practitioners and hospitals have recorded their experiences of trying

to promote family-hospital contact and the difficulties they have encountered. Finally, the results of the Edinburgh study can be used as a basis for reasoned speculation about the situation as it might exist in other hospitals and specialties.

Most hospitals catering for mental illness and subnormality patients were built in the last century or the early part of this one, when public and clinical attitudes to these conditions were different to those now prevailing. There is a general awareness that many of these centres are difficult to get to and that distance is one factor contributing to access problems. The position has been recently summarised in the report "Better Services for the Mentally Handicapped."¹

"When many of the present hospitals were built, or when country houses were acquired to be adapted and extended for use as "institutions" for the mentally handicapped, isolation from the surrounding community and substantial size were considered advantages. Now isolation and size present serious problems.

A large hospital necessarily serves a large population. Contact between hospital staff and patients' families, general practitioners and local health authorities is very difficult; so is visiting by relatives."

The report makes it clear that there are many large hospitals in this field serving extensive catchments. But remoteness from some sections of populations being served is a feature of even small hospitals in this specialty and also of ones recently opened.²

"At the end of 1969, 7 of our hospitals for the mentally handicapped contained over 1,500 beds; 2 of these had over 2,000. Another 3 clusters administered as single hospitals had over 1,500. 33 hospitals or clusters of hospitals had between 500 and 1,500 beds. Since the

1. Ibid.

2. Ibid.

early 1960's the policy has been not to plan any new hospital for the mentally handicapped for more than 500 patients but some new larger hospitals whose planning started earlier have recently come into use. Some of these are remote as well and have wards empty because staff cannot be recruited. There are also many smaller hospitals. But many of these are associated with larger hospitals and with them take patients from all parts of a single catchment area. Small hospitals therefore at present are sometimes just as remote from the population they serve as the larger ones."

Thus both large and small hospitals for the mentally handicapped serve extensive catchments and physical distance is recognised as one important factor which hinders patient-family contact.

The experience of Severall's hospital at Colchester, Essex¹ also shows that physical distance, allied with poor transport facilities, has presented serious problems to that hospital's efforts to involve the families of psychogeriatric patients in the therapeutic community. This particular example is of interest because it gives some insight into the nature of the problem as it affects the elderly and indicates how it might be solved.

"During the period in which conferences have been held the average attendance at each meeting has been twenty relatives, plus staff and other visitors. One reason that the numbers have been relatively small is the nature and size of the hospital's catchment area. Relatives may have to travel long distances, and because the area is mainly rural, public transport is often inadequate. When it has been possible to supply transport for some families, the numbers have increased and many relatives have said they would attend if transport of some kind were available. Attempts have been made to organise a voluntary car service. This has so far been unsuccessful, but the attempts continue."

The results of the Edinburgh survey, the experience of Severall's and the awareness of distance and access problems from the

1. Whitehead, op.cit.

fields of mental and subnormal care all underline the same set of inter-related points. Medical and medical social work opinion is moving firmly in the direction of greater family contact with hospital; for a variety of reasons many hospitals are not conveniently located for this progressive policy to be easily implemented; long physical distances to hospital are increasingly recognised as indicators of access problems for families, relatives and friends. What can be done about this problem?

The question needs to be looked at in its short and long term aspects. In the long term it is planned that a new pattern of hospitals should emerge in Britain to replace the current mixture of often inadequate and obsolete buildings which make up our hospital system. Hopefully, the new pattern of hospitals will be so located as to be accessible to the majority of the populations they serve. This subject is taken up in the final section of this chapter. But new hospitals take a long time to develop. Few entirely new ones have emerged in the ten years since the implementation of the national hospital plan in Britain in 1962. The creation of a new network of hospitals will clearly take many years and it is unquestionably the case that currently existing facilities will continue to operate in many areas for several decades to come. In the short and medium term then the growing policy of fostering contact between the in-patient and his family, relatives and friends will have to be pursued in circumstances which for many people in the community will be sub-optimal from the access viewpoint.

In this situation two steps are urgently needed. First our

appreciation of the relationships between distance and family access to all kinds of hospitals must be sharpened up by detailed research. Concurrently, appropriate measures must be sought which can be applied to overcome particular kinds of distance difficulties where they are identified. The Edinburgh study has shown that it is insufficient to have a general awareness of a 'distance problem' if purposeful action is to be undertaken to overcome it in individual cases. Family daily mobility, in the context of going to a hospital, is a complex and fluid concept conditioned by social and behavioural factors as well as geographic ones. In the Edinburgh situation it was suggested that solutions to distance problems for different families could range from financial help, (cost problems) through provision of transport (travel time problems) to measures such as the securing of a temporary place in a day nursery (time problem).

Similarly, the ways in which distance might operate to hinder visiting by relatives and friends of in-patients in other specialisms may be many and varied. Consider the case of elderly relatives visiting a psychogeriatric in-patient. The relatives may suffer from physical disabilities themselves which may restrict their mobility to varying degrees. Travel time may be a problem as, for economic reasons, few elderly people own private cars; similarly, because of meagre pensions some may be unable to meet the cumulative costs of public transport that might be involved by travel over long or even short distances, especially where visiting to a long stay in-patient is necessary. Others may have fears of hospitals; some may have special fears of mental hospitals; again, some relatives

may have attitudes towards the in-patients which would operate to restrict their wishes to visit. Thus, in such a group, sheer physical distance might be the problem to be overcome, or the travel time or the economic cost of distance or the psychological perception of distance might be the dominant factor. The range of measures that may be necessary to encourage contact with hospital for elderly people might thus run from the provision of help with transport problems, to arrangements for social work counselling.

This review has perforce been brief. However, the small amount of published information that has drawn attention to the subject of family access to hospital leaves little room for doubt that problems of considerable magnitude exist. Equally, it is clear that the subject is worthy of much more intensive research than it has so far received.

Distance and family access to hospital - The District General Hospital

Whilst detailed knowledge of distance effects on family access to hospital is at present lacking, it is nevertheless clear that extensive problems exist. How accessible will future hospitals be in Britain? In particular, how will distance affect family access? To what extent has this consideration been taken into account in planning for a network of district general hospitals in Britain?

Official thinking about the future hospital pattern in Britain is embodied in the Bonham-Carter proposals (1969). The model of the hospital hierarchy envisaged in that document and the rationale

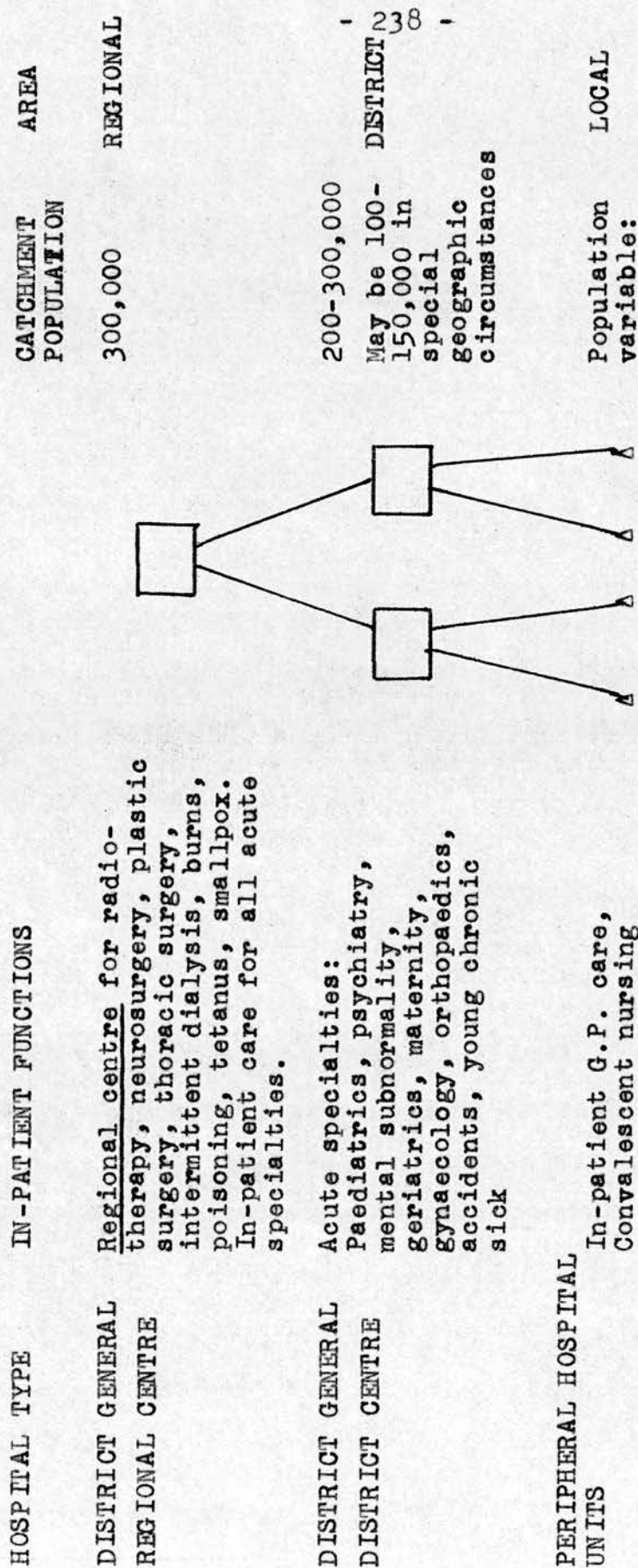
behind it provide convenient starting points for a discussion of these questions.

The hierarchy of proposed in-patient services is shown in Fig. 31. The model has three tiers which relate to each other to form a regionalised system of in-patient care for a given area. Peripheral hospital units are to provide minor medical services for local populations, the size of which are not specified. The middle tier is occupied by district general hospitals which are to provide care in the acute specialities for populations of up to 300,000. In the regional centre a central district general hospital will provide similar services for its own catchment population but, in addition, will offer super-specialist services to the population of the region as a whole.

Central to the model is the notion of the District General Hospital first described in the 1962 hospital plan and subsequently consolidated by the Bonham-Carter Report. In 1962 it was conceived that these hospitals would provide a wide range of acute specialty services, accident and out-patient services, some mental illness and some geriatric care for populations of between 150,000 and 200,000 people; super specialties such as neurosurgery would be placed at only selected district general hospitals. The 1969 proposals accentuated the trend towards the centralisation of services begun by the Hospital Plan. The Office of Health Economics in its 'Building for Health' has summarised the Bonham-Carter proposals and rationale behind them as follows:¹

1. Office of Health Economics. Building for Health (1970).

Fig. 31. Hierarchical model of in-patient services based on Bonham-Carter Report



"The report suggested inter alia that all psychiatric (including subnormality) and geriatric beds should be based on district general hospitals. It recommended that most district general hospitals should serve a population of 200,000 and up to 300,000 or more [in the major concentrations of populations]. These recommendations were based largely on two premises. Firstly, that specialised and interdependent services can most economically and most effectively be provided together at one central site, and secondly that it is not desirable for any consultant to work single handed in his specialty. Given the number of consultants in the country in each specialty, the latter premise leads directly to the recommendation that the district general hospital should serve a population of 200,000. Below this population there are, at present insufficient consultants in most specialties to provide at least two per hospital."

The hierarchy of in-patient services in the Bonham-Carter Model (Fig. 31) is thus planned from the top downwards. The emphasis on large district hospitals offering centralised services from all purpose sites is argued on the grounds of administrative economies of scale and the need to provide adequate medical staffing. Not surprisingly perhaps, because of the failure to plan from the needs of the community upwards, consideration of such issues as patient and family accessibility have received scant attention either in the original plan or in the 1969 report.

Before examining in detail what little these documents do have to say about the accessibility issue it will be useful to examine the proposed model of services from the spatial viewpoint in general terms. The most important point is that the spatial aspect of the Bonham-Carter proposals is weakly developed; for example, the document has no incisive treatment of the related issues of population distribution and spatial extent of catchment areas. As with the failure to consider the viewpoint of family access this geographic

weakness also stems from the failure to plan from the bottom upwards. The population base needed to support a district general hospital (200,000 - 300,000) is conceived only in narrow statistical terms as that which is necessary to support the recommended number of consultant staff per specialty. On this specific issue of population distribution the Bonham-Carter Report remarks:¹

"A study prepared for the Committee showed that only quite a small proportion of the population would not be within a reasonable distance of a district general hospital centre."

There are several reasons for treating such a statement with caution. First, no criteria are given for what constitutes "a reasonable distance". Indeed, a central point made throughout this thesis is that for the many different groups of people who will have occasion to use hospitals (visitors, domestic staff, in-patients, out-patients, professional staff etc.) we do not know enough to be able to assess what 'a reasonable' distance might be from area to area. Second, calculations have shown that in one area at least, East Anglia, hospitals serving 300,000 people would be more than 20 miles away from 1/5th of the population. ('The Hospital, November 1969). This information plus that from Severall's hospital quoted earlier and the Edinburgh survey results in chapter 6 suggest that distance may pose a very much greater problem than the Bonham-Carter committee anticipated. Third, the report refers to population distribution in general terms only. It fails to note that different age-groups and socio-economic groups in the population as well as different hospital user groups have varying mobility potentials.

1. Department of Health and Social Security (1969). Central Health Services Council. The Functions of the District General Hospital, London, H.M.S.O.

It is difficult to avoid the conclusion that the Bonham-Carter Report, like the original hospital plan, has given insufficient attention to the inter-related themes of population distribution, distance and hospital location, and, where it has touched on these matters, the treatment has been superficial. This conclusion is reinforced in the preface to the report by the view of the Secretary of State for Social Services. His opinion was that an important area for further enquiry was the variations in the pattern of hospital services that would be needed to take account of varying distribution of population and availability of sites.¹

Apart from this central geographic weakness there are two other specific points in the proposals with distance implications. These are the plans for the closure of some existing hospitals and the report's discussion of accessibility.

In the long term it is envisaged that as new district general hospitals emerge two kinds of currently existing hospital will be phased out. These are first, the single specialty centres such as the mental illness, geriatric/chronic sick and mentally subnormal hospitals, many of which are large and have always drawn patients from a wide area; the others are small hospitals serving essentially local communities. It would be reasonable to expect that the closure of the larger single specialty hospitals and the transference of their functions to specialised units on district general hospital sites might bring considerable numbers of patients closer to their

1. Ibid.

respective communities. On the other hand what is equally likely is that the closure of small hospitals and the movement of their functions onto district general hospital sites will increase the distance that many in-patients and their visitors will have to travel.

It is unfortunate that there is such a lack of hard base-line data about distance and hospital-community interaction which can be contributed to the discussion of issues of this kind. Suggestions have already been made earlier in this chapter for research aimed at establishing, from the family access point of view, acceptable functional ranges for different kinds of specialty in a range of hospitals in different areas of the country. If information of this nature could be acquired quickly it might prove very valuable in discussions about hospital closures and transfer of functions to different sites. Without this kind of data the community viewpoint cannot receive adequate consideration.

In the 1962 hospital plan there was almost no discussion of access to hospital or of visitors. The 1969 Committee gave more thought to the social issues likely to affect the use of centralised hospital facilities. Here, accessibility is discussed and it is evident that attention has been paid to some of the criticisms made of the 1962 plan from the geographic and socio-medical points of view:¹

"We recognise that if a larger population is to be served, some patients (and their visitors) will have to travel longer distances to hospital; moreover, a high proportion of hospital patients, and of their visitors are elderly and many of them cannot afford to travel by private car

1. Ibid.

or by taxi, but must rely on public transport or ambulance transport..... We would therefore draw special attention to the need for co-ordinated planning of hospital, ambulance and public transport services so that the district general hospital may be as accessible as possible to the public which it serves and by which it is staffed. We would also recommend that the presently very limited arrangements for giving financial assistance to those who cannot otherwise afford to visit their relatives in hospital should be sympathetically reviewed; and that arrangements should be made to provide overnight accommodation at or near the district general hospital for relatives of dangerously ill patients and for patients who may have to attend the hospital for prolonged investigation or treatment but do not require to be nursed in bed."

This greater attention to the geographic and socio-medical viewpoints of centralised hospitals is to be welcomed. At least there is official recognition that problems will exist and a willingness to offer constructive proposals for meeting them. This is important, as, whatever the future pattern of hospital services that finally does emerge in Britain, there are bound to be regional and highly centralised specialist units which will draw people from wide areas. Measures of the kind included in the extract quoted above will clearly be necessary for family access in such regional situations whether the district general hospital network comes to fruition or not.

Having welcomed the greater emphasis upon socio-medical issues however, it is important also to state that official thinking has not gone far enough. In the extract above for example, there is no reference to families and relatives being important for the therapeutic and rehabilitative progress of patients. 'Visitors' are still referred to in brackets and the suspicion must be that they are still being seen as an amenity issue. This view is strengthened

by the committee's inclusion of the following as their sixth principal recommendation:¹

"Importance of making the district general hospital as accessible as possible to its public."

'Accessibility' is thus seen as an important issue only in so far as it can help to make the District General Hospital concept work. But research into the relations between hospital locations, distance and community accessibility should be aimed more fundamentally than this. In any area it should form part of a basic evaluation procedure aimed at determining the nature of and locations for the most appropriate forms of in-patient and related medical services that are needed.

What then emerges out of this brief consideration of the Bonham-Carter proposals from the geographic and family viewpoints? The principal conclusion is that because the approach to the problem of renewing Britain's outdated hospital stock did not commence with assessments of community need both of these viewpoints have received inadequate consideration. But in-patient contact with families, relatives and friends is no longer considered to be merely a side issue in many medical specialties. Partly because of this fact and partly because their daily movement is likely to reflect the frictional effects of distance more sharply than the movements of patients, visitors to hospital can, and should be used as important indicators of community access problems. Ideally,

1. Ibid.

evaluation of their access difficulties along with a variety of other kinds of assessment of community needs should precede the implementation of any major hospital project envisaged under the Bonham-Carter proposals. Research is particularly needed to find out whether marked distance thresholds and varying functional ranges exist for different groups in the community; also, what the nature of their distance and mobility problems might be. The provision of such data could have a marked effect on the direction in which future hospital planning might go in different areas of the country. At the very least, it would provide a basis for the development of a coherent programme to help families and relatives with their access problems and, by so doing, benefit the patients.

CHAPTER 9

CONCLUSIONS

The focus of both parts of this work has been upon the relationship between distance and the use and organisation of medical care services. In this chapter, the main conclusions which have emerged from the work as a whole will be drawn together but before doing this, it will be helpful to recall the three inter-related objectives or themes which run through the thesis.

First, a major object has been to stress the value of adopting a geographic viewpoint in medical care studies. Second, and following from this, it has been the intention to underline the view that the professional geographer has an approach and skills to enable him to make useful contributions in this field. Finally, the work as a whole was meant to illustrate the value of working across disciplinary boundaries.

Several major conclusions emerged from the review of the literature in Part I, dealing with the importance of distance in the use and organisation of medical care services. Considerable knowledge has already been accumulated about how distance acts as a barrier to the delivery of medical care and also about how its effect might be overcome. This knowledge has, until very recently, come almost exclusively from geographically-oriented work undertaken by medical administrators, practising physicians, epidemiologists, sociologists, economists and civil servants. Only recently have geographers shown interest in this important field.

Substantial though the progress has been however, geographic studies in medical care, particularly in the post-war period, have suffered from two notable limitations. First, they have concentrated on examining hospital situations reflecting in part the view that commitment of capital in a service rather than the extent of the demand placed on it by the community gives it a priority for attention. Our lack of knowledge of the geographic relationships between the community and service centres at the general practitioner and local authority levels of the health services is unfortunate, especially in view of recent findings which indicate that factors of distance, transport, travel time and cost may be of wide relevance and profound importance at these levels.

The second limitation of the geographic studies in medical care to date springs from their preoccupation with patients. For a number of reasons the use of patient data by itself to represent the viewpoint of the community is unsatisfactory. If the community view is to be represented adequately when trying to decide such questions as the optimal location for hospital services, more information about other groups of user such as staff and visitors is required. This particular conclusion formed the departure point for the study of the relationship between distance and visiting which formed the second part of this work.

Three principal findings emerged from the visiting survey. First, distance had a marked effect on family daily visiting; second, different transport dependency patterns existed for middle and working class parents, so that daily access to the hospital was

probably much more convenient for the middle than the working class; third, the concept of daily mobility as it applies to parents visiting hospital is a complex rather than a simple affair. Taking these three findings together the general conclusion is reached that the view of distance, transport and mobility of the population taken by the 1962 Hospital Plan was too superficial.

The results from the Edinburgh study relate significantly to current geographic spatial theory and have practical implications for a number of in-patient situations. The fall in visiting with distance lends further empiric support to the notion of the attenuating effect of distance on human movement. The distance-visiting patterns were strongly affected by the social class and time of the week variables; this supports the view that geographic models need to take more account of the concepts and models of the social as well as behavioural sciences if they are to prove reliable predictors of human spatial activities.

The demonstration of a marked distance decay function opens up a range of medical care issues to further study. It would appear that visitors are a useful group to use as an index of distance effects on community access to hospital. In this instance recognition of a longer distance visiting problem has indicated avenues for devising measures to assist these parents. Looking more widely there is clearly a need to establish the nature of lapse rates for visitors to in-patients in other specialties. This is important for two reasons. First, contact between in-patients

and close family, relatives and friends is increasingly being advocated as sound medical care policy. Second, the establishment of visiting lapse rates for various specialties would provide a valuable body of knowledge for use in practical and theoretical approaches to medical care. Practically, such data would help to identify groups with access difficulties; appropriate policies to offset these difficulties might then be developed. In theoretical terms the establishment of visitors' lapse rates would help provide yardsticks for the measurement of community accessibility for use in hospital planning in general. Indeed, because official policy on this question has failed to consider the family or the spatial viewpoints so far, more data about the way distance and family access are related would be most useful at this point in time.

Finally, it is suggested that the results from the work as a whole support the view that the adoption of the geographic approach to medical care studies is a useful complement to the medical, administrative and economic ones and that co-operation across disciplinary boundaries remains essential if we are to derive full benefit from our innovations in the field of social provision.

BIBLIOGRAPHY

- ACCIDENT SERVICES REVIEW COMMITTEE, (1965). Second Report.
Accident Services of Great Britain and Ireland.
- ACHESON, R.M., BARKER, D.J.P. and BUTTERFIELD, W.J.H. (1962).
How general practitioners use outpatient services
in two London Boroughs. British Medical Journal, 2, 1315.
- ACHESON, R.M., BLANEY, R., BUTTERFIELD, W.J.H., CHAMBERLIN, J.,
SCOTT-BROWN, M. (1963). Factors influencing referrals
to the Outpatients' Department of a London Teaching
Hospital. British Journal of Preventive and Social
Medicine, 17, 2, 81.
- ADAMS, A.I. (1967). Death and injury on country roads: A study of
816 persons involved in rural traffic accidents.
Medical Journal of Australia, 2, 799.
- AIRTH, D. and NEWELL, D.J. (1962). The demand for hospital beds.
Newcastle upon Tyne: University of Durham, King's
College.
- ANDERSON, A.H. (1954). Health Resources in the Northern Great
Plains. Misc. Publ. 4, A.E.S. University of Nebraska.
- ANDERSON, E.H. (1954). Air transportation of the sick and injured
in civil aircraft. The Medical Journal of
Australia, 1, 463.
- ANDRY, R.G. (1960). Delinquency and parental pathology, London:
Methuen.
- AMBROSE, P. (1969). Analytical Human Geography. p. 172. London:
Longmans.
- AROMAA, A. (1968). Relating travelling time to patterns of medical
care utilization. Unpublished postgraduate paper,
Dept. of Social Medicine, University of Edinburgh.
- BAKWIN, H. (1942). Loneliness in infants. American Journal of
Diseases of Children, 63, 33.
- BAKWIN, H. (1949). Emotional deprivation in children. Journal
of Paediatrics, 35, 512.
- BAKWIN, H. (1951). The hospital care of infants and children.
Paediatrics, 39, 383.

- BARR, A. and DAVIES, J.O.F. (1957). The population served by a hospital group. *Lancet*, ii, 1105.
- BERRY, B.J.L. and HORTON, F.E. (1970). *Geographic perspectives on Urban Systems*. New Jersey: Prentice-Hall.
- BLOSS, J.F.E. (1945). The Meridi outbreak of Sleeping Sickness. *Trans. of the Roy. Soc. of Trop. Med. and Hygiene*. 39, 59.
- BLUMBERG, M.S. (1965). The effects of size and specialism on utilization of urban hospitals. *Hospitals*, 39, 43.
- BRAIN, D.J. and MACLAY, I. (1968). Controlled Study of Mothers and Children in Hospital. *British Medical Journal*, 1, 278.
- BRIDGMAN, R.F. (1955). The rural hospital. *World Health Organisation Monograph No. 21*, Geneva: W.H.O.
- BOGUE, D.J. (1949). The structure of the Metropolitan Community: a Study of dominance and sub-dominance. *Ann Arbor*.
- BUTTERFIELD, W.J. and WADSWORTH, M. (1966). A London Teaching Hospital. in *Problems and Progress in Medical Care. Second Series*. Nuffield Provincial Hospitals Trust: London: Oxford University Press.
- CARTWRIGHT, A. (1964). *Human Relations and Hospital Care*. London: Routledge, Kegan and Paul.
- CAPLAN, G. (1961). *An approach to Community Mental Health*. Chapter 4. London: Tavistock.
- CHRISTALLER, W. (1933). *Die zentralen Orte in Süddeutschland*. Jena. Translation by Baskin, C. (1954). Bureau of Population and Urban Research, University of Virginia.
- CIOCCO, A. and ALTMAN, I. (1954). Medical Service Areas and distance travelled for physician care in Western Pennsylvania. *Public Health Monograph No. 19*. United States Public Health Service.
- COMMISSION ON HOSPITAL CARE, (1947). *Hospital Care in the United States*, New York.
- DEPARTMENT OF HEALTH FOR SCOTLAND, (1936). *Committee on Scottish Health Services. Report*. Cmnd 5204. Edinburgh: H.M.S.O.
- DEPARTMENT OF HEALTH FOR SCOTLAND, (1946). *Scottish Hospitals Survey. General introduction to the reports*. Edinburgh: H.M.S.O.

- DEPARTMENT OF HEALTH FOR SCOTLAND, (1946). Scottish Hospitals Survey. Report on the South-Eastern Region. Edinburgh: H.M.S.O.
- DEPARTMENT OF HEALTH FOR SCOTLAND, (1946). Scottish Hospitals Survey. Report on the Western Region. Edinburgh: H.M.S.O.
- DEPARTMENT OF HEALTH AND SOCIAL SECURITY, (1969). Central Health Services Council. The Functions of the District General Hospital. London: H.M.S.O.
- DE VISE, P. (1966). Hospital Study Districts for Metropolitan Chicago, Technical Report No. 2, Hospital Planning Council for Metropolitan Chicago.
- DROSNES, D.L., LUBIN, J.W. and WYLIE, L.G. (1965). Highway Network Minimum Path Selection Applied to Health Facility Planning. Public Health Reports, 80, 9, 771.
- EVANG, K. (1960). Health Service, Society and Medicine. P.2. London: Oxford University Press.
- EVANS, A.M. and WAKEFORD, J. (1964). Research on hospital out-patients and casualty attendances. The Hospital, 60, 201.
- FAHS, I.J. and PETERSON, O.L. (1968). Towns without physicians and towns with only one - A study of four states in the Upper Midwest, 1965. American Journal of Public Health, 58, 7, 1200.
- FEIN, R. (1954). Studies on physician supply and distribution. American Journal of Public Health, 44, 615.
- FELDSTEIN, P.J. (1966). Research on the Demand for Health Services. Health Services Research. Washington: U.S. Public Health Service.
- FORSYTH, G. and LOGAN, R.F.L. (1960). The Demand for Medical Care. Nuffield Provincial Hospitals Trust. London: Oxford University Press.
- FOSTER, J.T. (1969). Helicopters make sense in medical care. Modern Hospital, 12, 79.
- FREEMAN, FOX, WILBUR SMITH AND ASSOCIATES, (1968). Land Use Transportation Study for East Central Scotland. Volume 2, Forecast Land Use and Travel Patterns in 1986.

- GARNETT, W.E. (1954). The Road to Health in Rural Virginia: 1900-1952. Bull. 466, A.E.S. Virginia Polytechnic Institute.
- GARNER, B.J. (1966). The Internal Structure of Shopping Centres; Northwestern University, Studies in Geography, 12.
- GARRISON, W. (1956). Allocation of road and street costs; Washington State Council for Highway Research, The Benefits of Rural Roads to Rural Property, IV, (Seattle).
- GETIS, A. (1963). The determination of the location of retail activities with the use of a map transformation; Economic Geography, 39, 1.
- GODLUND, S. (1959). Population, Regional Hospitals, Transport Facilities and Regions. Lund Studies in Geography. Series B, Human Geography, No. 21.
- GRUER, R. (1970a). Hospital Discharges in relation to Area of Residence. British Journal of Preventive and Social Medicine, 24, 2, 124.
- GRUER, R. (1970). A Study of Outpatient Services in the Scottish Border Counties. Unpublished report presented to the Scottish Home and Health Department.
- GRUER, R. (1971). The Economics of Outpatient Care. Lancet, i, 390.
- HAGGETT, P. (1965). Locational Analysis in Human Geography. 33-40. London: Arnold.
- HALLER, A.J. (1967). The hospitalised child and his family. Baltimore: Johns Hopkins.
- HARRIS, C-D. (1954). The Market as a factor in the localisation of industry in the United States; Anals of the Association of American Geographers, 44, 315.
- HARVEY, D. (1967). Models of the evolution of Spatial Patterns in Human Geography. in Models in Geography. Editors R.J. Chorley and P. Haggett. P. 560. London: Methuen.
- HEALTH AND SICKNESS RECORDS BUREAU, GLASGOW, (1948). Hospital and Community. I Hospital-treated sickness amongst the people of Stirlingshire. II Hospital-treated sickness amongst the people of Ayrshire.
- HOBBS, M.S.T. and ACHESON, E.D. (1966). Perinatal Mortality and the organisation of obstetric services in the Oxford area in 1962. British Medical Journal, i, 499.

- HOFFER, C.R., GIBSON, D.L., LOOMIS, C.P., MILLER, P.A., SCHULER, E.A., THADEN, J.F., (1950). Health needs and health care in Michigan. East Lansing. Michigan State College A.E.S. Bulletin No. 365.
- HOWARD, J.R. (1965). Helicopters Expand Hospital Service Area. The Modern Hospital, 105, 5, 99.
- HOWE, G.M. (1963). National Atlas of Disease Mortality in the United Kingdom. Royal Geographical Society, London: Nelson.
- HOWE, G.M. (1970). National Atlas of Disease Mortality in the United Kingdom. Royal Geographical Society, London: Nelson.
- ILLINGWORTH, R.S. and HOLT, K.S. (1955). Children in hospital. Some observations on their reactions with special reference to daily visiting. Lancet, ii, 1257.
- IRVINE, R.E. and SMITH, B.J. (1963). Patterns of Visiting. Lancet, i, 597.
- ISARD, W. (1956). Location and Space economy: a general theory relating to industrial location, Market areas, land use, trade and urban structure. P. 55. New York.
- JACKSON, J.N. (1966). Surveys for Town and Country Planning. London: Hutchinson University Library.
- JACOBS, A.R. and McLAUGHLIN, C.P. (1967). Analysing the role of the helicopter in emergency medical care for a community. Medical Care, 5, 343.
- JEHLIK, P.J. and McNAMARA, R.L., (1952). The relation of distance to the differential use of certain health personnel and facilities and to the extent of bed illness. Rural Sociology, 3, 261.
- KAUFMAN, H.F. and MORSE, W.W. (1945). Illness in rural Missouri. Columbia. Missouri A.E.S. Research Bulletin No. 391.
- KAUFMAN, H.F. (Editor) (1956). Research Notes. Rural Sociology, 21, 367.
- KING, M. (1966). Medical Care in Developing Countries. London: Oxford University Press.
- KLARMAN, H.E. (1965). The Economics of Health. New York: Columbia University Press.

- LANGFORD, W.S. (1948). Physical illness and convalescence: their meaning to the child: *Journal of Pediatrics*, 33, 242.
- LEARMONTH, A.T.A. (1957). Medical Geography in Indo-Pakistan. *Transactions and Papers of the Institute of British Geographers*, 23, 37.
- LEVY, D.M. (1945). Psychic trauma of operations in children. *American Journal of Diseases of Children*, 69, 7.
- LIVELY, C.E. and BECK, P.G. (1927). The Rural Health Facilities of Ross County, Ohio. *Wooster. Ohio A.E.S. Bulletin* No. 412, 1.
- LOGAN, R.F.L. (1964). Assessment of Sickness and Health in the Community: Needs and Methods. *Medical Care*, II, 173.
- McGLASHAN, N.D. (1966). The Medical Geographer's Work. *International Pathology*, July, 81.
- McGLASHAN, N.D. (1967). Geographical evidence on Medical Hypotheses. *Trop. Geogr. Med.* 19, 333.
- McLENNAN, B.B. (1949). Non-Medical care of clinically ill children in a hospital. *Lancet*, ii, 209.
- McNAMARA, R.L. and HASSINGER, E. (1956). The Pattern of Medical Services for Incorporated Places of 500-or-more Population in Missouri, 1950. *Rural Sociology* 21, 175.
- MANNINSON, R. (1964). Hospital Service Areas - Time replaces space. *Journal of the Association of American Hospitals*, 38, 52.
- MARTIN, M.R.R. (1970). Medical Usage of Helicopters in Britain. Injury: The British Journal of Accident Surgery, 1, 3, 213.
- MATHER, W.G. (1948). The use of Health Services in two Southern Pennsylvania Communities. *Pennsylvania Agricultural Experimental Station, Bulletin* No. 504.
- MAYO, S.C. and HAMILTON, C.H. (1960). Distribution and Characteristics of Physicians and other Health Personnel in North Carolina. *Progress Report RS-38. A.E.S. North Carolina State College.*
- MINISTRY OF HEALTH, (1953). Report for the year ended 31 December 1952, London: H.M.S.O.

- MINISTRY OF HEALTH, (1954). Report for the year ended 31 December 1953, London: H.M.S.O.
- MINISTRY OF HEALTH, (1955). Report for the year ended 31 December 1954, London: H.M.S.O.
- MINISTRY OF HEALTH, (1957). Report for the year ended 31 December 1956, London: H.M.S.O.
- MINISTRY OF HEALTH, (1959). Report for the year ended 31 December 1958, London: H.M.S.O.
- MINISTRY OF HEALTH, (1960). Report for the year ended 31 December 1959, London: H.M.S.O.
- MINISTRY OF HEALTH, (1961). Report for the year ended 31 December 1960, London: H.M.S.O.
- MINISTRY OF HEALTH, (1968). Report for the year ended 31 December 1967, London: H.M.S.O.
- MINISTRY OF HEALTH, (1959). The Welfare of children in hospital. London: H.M.S.O.
- MONTGOMERY, K. (1968). Outpatients of a London teaching hospital. British Journal of Preventive and Social Medicine, 22, 50.
- MORRILL, R.L. and EARICKSON, R. (1963). Hospital variation and patient travel distances. Inquiry, 4, 4, 26.
- MORRIS, K.R.S. (1949). Planning the control of Sleeping Sickness. Trans. of the Roy. Soc. of Trop. Med. and Hygiene, 43, 165.
- MOUNTIN, J.W., PENNEL, E.H. and NICOLAY, V. (1942). Location and Movement of physicians, 1923 and 1938 - General Observations. Public Health Reports, 57, 1363.
- MOUNTIN, J.W., PENNEL, E.H. and NICOLAY, V. (1942). Location and Movement of physicians, 1923 and 1938. Effect of local factors upon location. Public Health Reports, 57, 1945.
- MOUNTIN, J.W., PENNEL, E.H. and BROCKETT, G.S. (1945). Location and Movement of physicians, 1923 and 1938. Changes in Urban and Rural totals for established physicians. Public Health Reports, 60, 173.
- MURRAY, M. (1962). The Geography of death in England and Wales. Annals of the Association of American Geographers. 52, 130.

- MYERS, G.W. (1953). Hospitalisation among residents of urban and rural communities. Canadian Journal of Public Health, 44, 11, 43.
- NATIONAL HEALTH SERVICE, (1962). A Hospital Plan for England and Wales. Cmd 1604. London: H.M.S.O.
- NELSON, L. and FRANCIS, R.G. (1955). Rural-Urban Distribution of Hospital Facilities and Physicians in Minnesota. Station Bull. 432. A.E.S. University of Minnesota.
- NEWSON, J. and E. (1963). Infant care in an urban community. London: Allen and Unwin.
- NUFFIELD FOUNDATION, (1963). Children in Hospital. Studies in Planning. London: Oxford University Press.
- NUFFIELD PROVINCIAL HOSPITALS TRUST, (1955). Studies in the functions and design of hospitals. London: Oxford University Press.
- OFFICE OF HEALTH ECONOMICS, (1970). Building for Health.
- OLSSON, G. and PERSSON, A. (1964). The spacing of central places in Sweden; Regional Science Association, Papers and Proceedings, 12, 87.
- OXFORD REGIONAL HOSPITAL BOARD, (1961). Out-patient services for Orthopaedic and Casualty Patients at Princess Margaret Hospital, Swindon. Operational Research Unit. Report No. 1.
- OXFORD REGIONAL HOSPITAL BOARD, (1963). Hospital Out-patient Services. Operational Research Unit. Report No. 3.
- OXFORD REGIONAL HOSPITAL BOARD, (1965). Operational Research Unit. The Work of a Cottage Hospital in a Rural Community.
- PAMPANA, E. (1963). A textbook of Malaria eradication. London: Oxford University Press.
- PARLIAMENT, Parliamentary Papers, 1912, Vol. 1. (Cmd 6559). "Report of the Highlands and Islands Medical Service Committee".
- PARRY, L.A. (1947). The urgent need for reforms in hospital. Lancet, 11, 881.
- PEEBLES, A. (1929). A survey of Statistical data on Medical Facilities in the United States - a compilation of existing material. The Committee on the Costs of Medical Care. Abstract of Publication No. 3.

- PORRITT, N. (1934). The Menace and geography of Eclampsia in England and Wales. Oxford Medical Publications.
- POWERS, G.F. (1948). Humanising hospital experiences. American Journal of Diseases of Children, 76, 365.
- PROTHERO, R.M. (1965). Migrants and Malaria. London: Longmans.
- PRUGH, D.G., STAUB, M.A., SANDS, H.H., KIRSCHBAUM, R.M., and LENIHAN, E.A., (1953). A study of the emotional reactions of children and families to hospitalization and illness. American Journal of Orthopsychiatry, XXIII, 70.
- RAVENSTEIN, E.G. (1885). The laws of Migration. Journal of the Royal Statistical Society, 48, 52.
- REPORTS OF THE SLEEPING SICKNESS COMMISSION. I - IV, 1902-5.
- REPORTS ON PLAGUE INVESTIGATIONS IN INDIA, (1906). Journal of Hygiene, 6, 422.
- REPORTS ON PLAGUE INVESTIGATIONS IN INDIA, (1907). Journal of Hygiene, 7, 724.
- REPORTS ON PLAGUE INVESTIGATIONS IN INDIA, (1910). Journal of Hygiene, 10, 349.
- RICHARDSON, I.M. and DINGWALL-FORDYCE, I. (1968). Patient Geography in General Practice. Lancet, ii, 1290.
- ROBERTSON, J. (1953). A two year old goes to hospital. (Film), London: Tavistock clinic.
- ROBERTSON, J. (1958). Going to hospital with Mother. (Film), London: Tavistock Institute of Human Relations.
- ROEMER, M.I. (1956). The Saskatchewan Air Ambulance Service: Medical and public health aspects. Canadian Medical Association Journal, 75, 529.
- ROSENTHAL, G.D. (1965). Factors affecting the Utilization of short-term General Hospitals. American Journal of Public Health, 55, 1734.
- ROSS, R., ANNETT, H.E., and AUSTEN, E.E. (1900). Report of the Malaria Expedition to Sierra Leone. Memoir II, Liverpool School of Tropical Medicine. University Press of Liverpool.

- ROTH, F.B. and ROEMER, M.I. (1955). Some factors influencing hospital utilization in Saskatchewan. Canadian Journal of Public Health, 46, 8, 303.
- ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH, (1852). Report on the Existing Deficiency of Medical Practitioners in the Highlands and Islands. Edinburgh.
- SCHAFFER, H.R. and CALLENDER, W.M. (1959). Psychological effects of hospitalisation in infancy. Journal of Pediatrics, 24, 528.
- SCOTTISH HOME AND HEALTH DEPARTMENT, (1962). Visiting patients in hospital. Scottish Health Services Council. Edinburgh: H.M.S.O.
- SCOTTISH HOME AND HEALTH DEPARTMENT, (1967). Health and Welfare Services in Scotland. Report for 1966. Edinburgh: H.M.S.O.
- SCOTTISH HOME AND HEALTH DEPARTMENT, (1968). Health and Welfare Services in Scotland. Report for 1967. Edinburgh: H.M.S.O.
- SHANNON, G.W., BASHSHUR, R.L. and METZNER, C.A. (1969). The concept of distance as a factor in accessibility and utilization of health care. Medical Care Review, 26, 2, 143.
- SHEPS, M.C. (1945). Saskatchewan plans health services. Canadian Journal of Public Health, 36, 175.
- SOUTHMAYD, H.J. and SMITH, G., (1944). Small Community hospitals. New York: The Commonwealth Fund.
- SOWERBY, P.R. (1969). The use of transport in a rural practice. Journal of the Royal College of General Practitioners, 17, 131.
- SPENCE, J.C. (1947). Care of children in Hospital. British Medical Journal, i, 125.
- STAMP, L.D. (1964). Some aspects of Medical Geography. London: O.U.P.
- STATE OF CALIFORNIA, DEPARTMENT OF PUBLIC HEALTH: Hospitals for California. Berkeley. August, 1965, P. 15.
- STEVENSON, J.S.K. (1970). Working paper suggesting some methods of obtaining more economic use of resources in General Practice. Department of General Practice, University of Edinburgh.

- STOUFFER, S.A. (1940). Intervening opportunities: a theory relating mobility and distance. *American Sociological Review*, 5, 845.
- STOUFFER, S.A. (1962). *Social research to test ideas*. New York.
- SUTTON, F.C. (1960). Ten principles for professional hospital planning. *Hospitals*, 34, 11, 39.
- TERRIS, M. and MONK, M.A. (1956). Recent trends in the distribution of physicians in Upstate New York. *American Journal of Public Health*, 46, 585.
- THOMPSON, D.L. (1963). New Concept: Subjective distance. Store impressions affect estimates of travel time. *Journal of Retailing*, 39, 1.
- UNITED STATES PUBLIC HEALTH SERVICE, (1961). *Areawide planning for hospitals and related health facilities*. P.H.S. publication No. 855. Washington, D.C.: U.S. Government Printing Office.
- VAUHKONAN, O. (1967). In: Relating travelling time to patterns of medical care utilization. Aromaa A. (1968) Dept. of Social Medicine, University of Edinburgh.
- VERTEUIL, E. and URICH, F. (1935). The study and control of paralytic rabies transmitted by bats in Trinidad, British West Indies. *Trans. of the Roy. Soc. of Trop. Med. and Hygiene*, 29, 317.
- VICKERS, A. (1958). The flying doctor service of Australia. *The Medical Journal of Australia*, 1, 130.
- VOORHEES, A. (1955). A general theory of traffic movement. *Proceedings of the Institute of Traffic Engineers*: P. 46.
- WATSON, J.W. (1955). Geography - A Discipline in Distance. *Scottish Geographical Magazine*, 71, 4, 1.
- WEISS, P., MACAULEY, J., and PINCUS, A., (1966). Geographic factors and the release of patients from State Mental Hospitals. *American Journal of Psychiatry*, 123, 408.
- WILLIAMS, T.F., WHITE, K.L., ANDREWS, E., DIAMOND, B.G., GREENBERG, A.A., HAMRICK, E.A., and HUNTER, E.A. (1960). Patient referral to a university clinic: patterns in a rural state. *American Journal of Public Health*, 50, 1493.

- WILSON, I.C. and METZLER, W.H. (1938). *Sickness and Medical Care in an Ozark area in Arkansas*. University of Arkansas. Agricultural Experimental Station. Bulletin No. 353.
- WOOD, L.J. (1970). *Perception Studies in Geography*. Institute of British Geographers. Transactions. 50, 129.
- WOODWARD, J.W. (1959). *Emotional disturbances of burned children*. British Medical Journal, 1, 1009.
- WOODWARD, J.W. and JACKSON, D. (1961). *Emotional reaction in burned children and their mothers*. British Journal of Plastic Surgery, 13, 316.
- WOLFF, S. (1969). *Children under stress*. London: The Penguin Press.
- ZIPF, G.K. (1949). *Human behavior and the principle of least effort*. New York: Hafner.

SUPPLEMENTARY BIBLIOGRAPHY

- ABLER, R., ADAMS, J.S., and GOULD, P. (1971). *Spatial Organisation*. New Jersey: Prentice-Hall.
- BROWN, G.W. (1963). 'Changing Patterns of Care of the Schizophrenic Patient'. British Journal of Psychiatric Social Work, Vol. VII, 1.
- CHORLEY, R.J. and HAGGETT, P. (1967). *Models in Geography*. London: Methuen.
- DEPARTMENT OF HEALTH AND SOCIAL SECURITY. (1971). "Better Services for the Mentally Handicapped". Gmd. 4683. London: H.M.S.O.
- GOULD, P. (1969). *Methodological developments since the fifties*. in, *Progress in Geography*, Vol. 1. London: Arnold.
- HEIMLER, E. (1967). *Mental Illness and Social Work*. Pelican Books.
- HOWELLS, J.G. (1963). *Family Psychiatry*. Edinburgh: Oliver and Boyd.
- MELLSOP, G.W. (1969). *The Effect of Distance in Determining Hospital Admission Rates*. The Medical Journal of Australia, 11. 814-817.

- MORRILL, R.L. (1970). The Spatial Organisation of Society. Belmont: Wadsworth Publishing Company, Inc.
- OLSSON, G. (1965). Distance and Human Interaction. Bibliography Series Number Two, Regional Science Research Institute.
- PAHL, R.E. (1965). Urbs in Rure; London School of Economics Geographical Paper No. 2.
- PAHL, R.E. (1967). Sociological Models in Geography, in Models in Geography, Edited by Chorley R.J. and Haggett, P. London: Methuen.
- REHIN, G.F. and MARTIN, F.M. (1968). Patterns of Performance in Community Care. Nuffield Provincial Hospitals Trust, O.U.P.
- SUSSER, M.W. and WATSON, F. (1962). Sociology in Medicine, London, O.U.P.
- WHITEHEAD, A. (1970). In the Service of Old Age. Pelican Books.

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APPENDICES

APPENDIX B

Information to be collected

Revised list of variables

1. The patient and his hospital experience: Source: hospital records.

Name, sex, age, length of stay

Diagnostic group of illness

Admission procedure

Admission status.

2. The visitor and visiting activity. Source: Visitor

For each visit made: The visitor's identity

Time of arrival and departure

Date of visit (from which could be derived
the day of the week and the day of
patient's stay)

Travel time of access to hospital

Travel cost of access to hospital

Other costs incurred in visiting (overnight
stay etc.)

Telephone calls to hospital

Details of any overnight stay near to hospital.

3. Geographic and social factors affecting patient's family visiting.

Source: Parents of patient.

Distance of home from hospital

Parental marital status

Number and ages of children in family

Social class (based on father's occupation)

Location of father's work place

Mother's work status

Location of mother's work place

Vehicle ownership

Parental driving status.

APPENDIX C

Visiting card used in the pilot study.

<p>Please fill in a card each time you make a visit (i.e. each time you come to the ward from outside the Hospital grounds)</p> <p>USE A SEPARATE CARD FOR EACH VISIT</p>	<p>For office use</p> <p>P.S. No.....</p> <p>R.D. No.....</p>				
<p>1. Patient's Name _____</p>					
<p>2. Place a tick in a box to show your relation to the patient</p> <table style="width: 100%;"><tr><td style="text-align: center;">Mother <input type="checkbox"/></td><td style="text-align: center;">Father <input type="checkbox"/></td></tr><tr><td style="text-align: center;">Other relative <input type="checkbox"/></td><td style="text-align: center;">Unrelated friend <input type="checkbox"/></td></tr></table>		Mother <input type="checkbox"/>	Father <input type="checkbox"/>	Other relative <input type="checkbox"/>	Unrelated friend <input type="checkbox"/>
Mother <input type="checkbox"/>	Father <input type="checkbox"/>				
Other relative <input type="checkbox"/>	Unrelated friend <input type="checkbox"/>				
<p>3. Enter in the spaces below your time of arrival in the ward and your time of departure from the ward for this visit.</p> <p style="margin-left: 40px;">Time of arrival _____</p> <p style="margin-left: 40px;">Time of departure _____</p>					
<p>As you leave the hospital at the end of this visit please drop this card in the box provided in the corridor beside the waiting room. THANK YOU.</p>					

APPENDIX D

Copy of the letter to parents which accompanied questionnaire.

From Mr. F. Forster
Assistant Lecturer
Department of Social Medicine,
University of Edinburgh.

Dear Parent,

Thank you very much for helping in the survey of visiting at the Royal Hospital for Sick Children. I should now be grateful if you would complete the short questionnaire enclosed and return it to me in the stamped and addressed envelope.

The questionnaire asks about your journeys to hospital and also for some family details which might have influenced the number of times you were able to go to visit your child. (For example, question 6 asks about father's place of work, as someone working near the hospital might have been able to visit more than someone working further away).

I would like to stress that your replies will be treated with the strictest confidence and all individuals will remain anonymous when the information is analysed.

Thanking you for your co-operation.

Yours sincerely,

F. FORSTER.

APPENDIX D₁

Copy of pilot questionnaire.

P.S. No. 38.

Questionnaire for Visiting Survey

at The Royal Hospital for Sick Children, Edinburgh

Please complete the questionnaire by placing a tick in the appropriate box where these are provided ☒ or, by writing your answers in the spaces shown (-----).

If one of the parents of the patient is no longer alive or is not living at the address you give in Question 3, please do not answer any questions relating to that person.

FAMILY DETAILS

1. Mother's or stepmother's full name _____
2. Father's or stepfather's full name _____
3. Full home address _____

4. Number of your children living at this address: _____

5. Ages of these children:
(in years at their last birthday) _____

6. FATHER or STEPFATHER ONLY:

- a) What is your present occupation? (Please be as clear as possible: for example do not just write "engineer" but give details. e.g. "electrical engineer, served apprenticeship, self employed, employ 10 men".)

- b) If you are unemployed what was your last occupation?

- c) What was the full postal address of your place of work during your child's stay in hospital?

APPENDIX D₁ (Contd.)

7. MOTHER or STEPMOTHER ONLY

a) During the time that your child was in hospital were you -

In full time paid employment? ☐

In part time paid employment? ☐

Doing other duties: please write 'housewife', 'student' etc.
as applicable _____

b) If in paid employment when your child was in hospital what
was your occupation?
(please be as clear as possible)

c) What was the full postal address of your place of work?

8. a) Do you (either mother or father) have any motor transport?
(e.g. car, van, motor cycle, etc.)

Yes ☐

No ☐

b) If "yes", please specify whether car, van etc.

TRAVEL TO HOSPITAL

Please note carefully that this section refers to only THE FIRST 14
DAYS of your child's stay in hospital.

1. To help you make a visit to your child did you ever stay over-
night nearer to the hospital than your home at:-

a) a friend's of relative's home?	Mother	Yes <input type="checkbox"/>	No <input type="checkbox"/>
	Father	Yes <input type="checkbox"/>	No <input type="checkbox"/>

APPENDIX D₁ (Contd.)

- b) a hotel, hostel, boarding house, Mother Yes ☐ No ☐
guest house, or similar place Father Yes ☐ No ☐
of accommodation?

2. If you answered "Yes" to part a) or part b) of the last question:-

a) Give the street and town or city where you stayed:

_____ (street) _____ (town/city)

_____ (street) _____ (town/city)

b) On how many nights did you stay overnight away from home?

Mother _____

Father _____

Questions 3 and 4 refer to ALL journeys made FROM HOME TO HOSPITAL when mother or father were visiting, whether travelling alone, together or with other people.

Put a line through the answer spaces (_____) if you did not travel by the method mentioned.

What was the shortest time it took (to nearest 5 minutes) from leaving home to arriving in the hospital ward for journeys by:-

a) Private transport only? _____ hrs _____ mins.
(car, van, m/cycle etc.
but NOT TAXI)

b) Public transport only? _____ hrs _____ mins.
(includes TAXI)

(Please state how you travelled for this "shortest journey" - e.g.
"In 2 buses," "in 1 train and 1 bus" _____)

c) Private and public transport? _____ hrs _____ mins.

(Please state how you travelled for this "shortest journey" - e.g.
"In 1 car and 1 train" _____)

4. What was the lowest cost of fares for A SINGLE JOURNEY FROM HOME TO HOSPITAL FOR 1 ADULT when public transport was used?

£.....s.....d.....

(Please state how you travelled for this "lowest cost journey"
e.g. "In 2 buses," _____)

APPENDIX D₁ (Contd.)

5. If your child had been less ill do you think you would have made:-

a) less visits?

Mother ☐

Father ☐

b) about the same number of visits?

Mother ☐

Father ☐

c) more visits?

Mother ☐

Father ☐

d) don't know.

Mother ☐

Father ☐

APPENDIX E

Visiting card used in the main study.

<u>PLEASE FILL IN A CARD EACH TIME YOU MAKE A VISIT</u> <u>USE A SEPARATE CARD FOR EACH VISITOR</u>	
1. Patient's Name _____	
2. Please tick to show your relationship to the patient.	
Mother <input type="checkbox"/>	Brother (only) <input type="checkbox"/> Other relative <input type="checkbox"/>
Father <input type="checkbox"/>	Sister (if came) <input type="checkbox"/> Unrelated friend <input type="checkbox"/>
	(into) <input type="checkbox"/>
	(ward)
3. Time of <u>arriving</u> at hospital	
for this visit a.m. p.m.
Time of <u>leaving</u> hospital	
at end of this visit a.m. p.m.
As you leave the hospital at the end of this visit please drop this card in the box provided in the main corridor. THANK YOU.	

APPENDIX F

Copy of final questionnaire.

QUESTIONNAIRE FOR VISITING SURVEY

at ROYAL HOSPITAL FOR SICK CHILDREN, EDINBURGH

Please complete the questionnaire by placing a tick in the appropriate box where these are provided ☒ or, by writing your answers in the spaces shown (-----).

If one of the parents of the patient is no longer alive or is not living at the address you give in Question 3, please do not answer any questions relating to that person.

FAMILY DETAILS

1. Mother's or stepmother's full name _____
2. Father's or stepfather's full name _____
3. Full home address _____

4. Number of your children living at this address: _____
5. Ages of these children: _____
(in years at their last birthday)
6. FATHER or STEPFATHER ONLY:
 - a) What is your present occupation? (Please be as clear as possible: e.g. do not just write "engineer" but give details such as "Electrical Engineer, served apprenticeship").

 - b) Are you self employed? Yes ☐ No ☐
If "yes" how many people do you employ? _____
 - c) What was the full postal address of your place of work during your child's stay in hospital?

 - d) If you are unemployed what was your last occupation?

APPENDIX F (Contd.)

7. MOTHER or STEPMOTHER ONLY

a) During the time that your child was in hospital were you -

In full-time paid employment? ☐

In part-time paid employment? ☐

Doing other duties? (please write 'housewife', 'student' etc.
as applicable) _____

b) If in paid employment when your child was in hospital what
was your occupation? (please be as clear as possible)

c) What was the full postal address of your place of work?

8. a) Do you (either mother or father) have any motor transport?
(e.g. car, van, motor cycle, etc.)

Yes ☐ No ☐

b) If "yes": i) please specify whether car, van etc.

ii) please indicate who is able to drive the vehicle

Mother Yes ☐ No ☐

Father Yes ☐ No ☐

TRAVEL TO HOSPITAL

Please note carefully that this section refers to only THE FIRST 14 DAYS of your child's stay in hospital.

1. To help you make a visit to your child did you ever stay over-
night nearer to the hospital than your home at:-

a) a friend's or relative's home? Mother Yes ☐ No ☐

Father Yes ☐ No ☐

APPENDIX F (Contd.)

- b) a hotel, hostel, boarding house, Mother Yes ☐ No ☐
guest house, or similar place
of accommodation? Father Yes ☐ No ☐

2. If you answer "Yes" to part a) or part b) of the last question:-

a) Give the street and town or city where you stayed:

_____ (street) _____ (town/city)
_____ (street) _____ (town/city)

b) On how many nights did you stay overnight away from home?

Mother _____

Father _____

3. If the hospital had provided accommodation for you to stay overnight:-

a) would you have wanted to stay at any time during your child's period in hospital?

Mother Yes ☐ No ☐

Father Yes ☐ No ☐

b) If "yes", would you have been able to stay at any time during your child's period in hospital? (bearing in mind family and work duties).

Mother Yes ☐ No ☐

Father Yes ☐ No ☐

Questions 4, 5 and 6 refer to ALL JOURNEYS FROM HOME TO HOSPITAL when MOTHER or FATHER were visiting, whether travelling alone, together or with other people.

4.a) What was the shortest time it took for the journey (to nearest 5 mins.) FROM LEAVING HOME TO ARRIVING IN THE HOSPITAL WARD?

..... hrs. mins.

b) What form(s) of transport did you use for that "shortest journey" (e.g. "car", "bus and train" etc.)?

APPENDIX F (Contd.)

- 5.a) What was the lowest cost of fares for A SINGLE JOURNEY FROM HOME TO HOSPITAL FOR 1 ADULT when public transport (including taxi) was used?

£ _____ s _____ d _____

- b) What form(s) of transport did you use for that "lowest cost journey" (e.g. "bus and train", "bus only" etc.)?
-

6. What was the usual form of transport you used when travelling from home to hospital?

*(i.e. for half or more than half of your journeys)

Mother _____

Father _____

7. If your child had been less ill do you think you would have made -

a) less visits?

Mother ☐

Father ☐

b) about the same number of visits?

Mother ☐

Father ☐

c) more visits?

Mother ☐

Father ☐

d) don't know.

Mother ☐

Father ☐

THANK YOU FOR YOUR HELP.

F. Forster.

APPENDIX G

Notes for Supervisors.

Visiting Survey: Royal Hospital for Sick Children, Edinburgh.

1. Aims of the study.
2. How the survey is being carried out.
3. Plan and explanation of ground floor - R.H.S.C.
4. Duties for supervisors.
5. Hospital and visitors' routines affecting supervisors' duties.

1. AIMS OF THE STUDY

Current thinking in hospital planning is towards the concept of larger District General Hospitals. There will be a reduction in the number of local hospitals in the future and more patients (and visitors) will have to travel longer distances for hospital care. We have little or no information available about the effects of distance upon consumers' use of hospital facilities.

By studying a hospital situation where patients and visitors are currently drawn from a wide area it should be possible to provide such information. The R.H.S.C. in Edinburgh is a suitable hospital for this purpose, serving as it does, Edinburgh, S.E. Scotland and, for some specialities all of Scotland. A second advantage of using this hospital is that it is specifically a hospital for children. In the light of the Platt Report on the Welfare of Children in Hospital (1959) a study of the effects of distance of residence upon family visiting frequency has considerable relevance to the question of the future development of children's hospital services.

2. HOW THE SURVEY WILL BE CARRIED OUT

There will be two stages in the survey.

Stage 1. A record will be kept of the frequency and times of visits to each child.

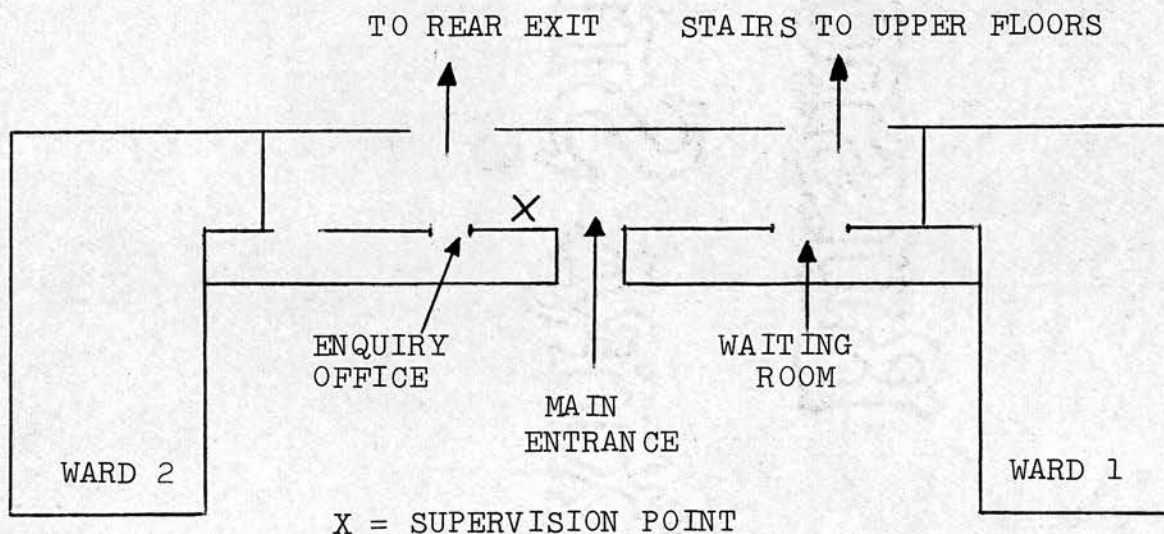
Stage 2. Details about family background and the travelling patterns of the child's parents will be collected by questionnaire after each child is discharged.

APPENDIX G (Contd.)

Supervisors' duties are concerned only with stage 1.

Method: All visitors to wards 1 and 2 are asked to fill in a slip (like the one attached) each time they visit. These slips are kept by each bed. As visitors leave they will drop the slips in a box in the main corridor.

Plan and Description of ground floor - R.H.S.C.



Description:

1. Only the main rooms affecting supervisors' duties are shown in the plan.
2. Wards 1 and 2 lie at opposite ends of the main corridor.
3. The positions of the two exits, the enquiry office and waiting room (for Visitors) in relation to each other should be carefully noted.
4. Visitors from wards 1 and 2 must come into the main corridor to leave the hospital (by front or rear exit).

APPENDIX G (Contd.)

DUTIES FOR SUPERVISORS

The need for supervisors: In surveys of this kind, no conclusions can be drawn unless the accuracy of the data is known. If no checks were made it would not be possible to tell what proportion of visitors had completed visiting slips. Thus daily supervision is important.

Supervisors' duties: About 1 in 10 of visitors leave the ward without completing a slip. The supervisors' main active function is to help these visitors to complete a slip before they leave the hospital.

Dealing with visitors:

1. The supervisor must approach all people who leave wards 1 and 2, who do not leave a slip in the box and who conceivably could be a visitor: The three main groups you will meet and their responses will be:-

- (a) Hospital personnel off duty: (Drs. nurses, domestic staff, students, etc.) when stopped they will merely say "staff" or some such phrase of identification.

- (b) Visitors who are exempt: These groups are:-

- i) Visitors to a child on admission day.

- ii) Visitors to a child on discharge day.

Visitors will let you know if they are in these groups.

- (c) Visitors who have not filled in a card and who are not exempt:

It is this group that supervisors must help.

2. APPROACH TO VISITORS:

Visitors may not have completed a slip for a number of reasons. They may be suspicious of the survey's motives or they may not have seen the slips in the ward. They may be too upset or they may be unable to read or write. All need reassurance and help.

Through a warm and sympathetic approach the supervisor can bring the majority, if not all, of these people into the survey.

You may be asked by visitors or hospital personnel about the aims of the survey. Please do not become involved in discussions about such issues as the pros and cons of daily visiting to children, the provision of overnight accommodation for mother or related topics. There are sound reasons for avoiding this topic of conversation in a research project of this nature.

To be valid, the results of this kind of study work must be

APPENDIX G (Contd.)

unbiased. If a parent got the impression that the supervisors of the project "felt it a good thing to visit every day" this could influence the parent to increase his/her efforts to visit. Similarly it could influence his/her answers to some of the questionnaire questions. Again, mothers meet and chat during their long hours in the ward. Opportunities for rumours about the study to grow and spread in the ward are thus always present. The answers supervisors should give if questioned should conform to the following points:

- (a) All supervisors must give broadly similar answers.
- (b) Remain on a "general level". Do not get down to discussing particular patients.
- (c) The following are recommended as ways of answering queries about the survey:

"A great deal of money is being spent on providing new hospitals. It is recognised that visiting patients in hospital is an important part of hospital life. Little is known about visitors and visiting to patients in hospital however, and, the more we can find out the more we can take visitors' needs into account when planning new hospitals".

"This hospital for example, serves all of S.E. Scotland as well as Edinburgh and it would be of value to know whether people from Fife and other areas further away, such as Berwickshire, use the hospital as much or at the same time as people from Edinburgh. Again, at one time visitors could only come in the evenings until a few years ago - now they can come all day and from the hospital point of view it would be useful to know when the wards are most used as such information could help with the planning of internal routines. It is only by collecting facts and analysing them that future hospitals can best take into account the needs of patients, visitors and members of staff together."

Hospital routines affecting the role of the supervisor:

An awareness of routines in the hospital can be of help to supervisors. The principal points to note are as follows:

1. Hospital Routines:

(a) Waiting days:

Days when one ward receives most or all of the admissions for that 24 hour period.

<u>Ward 1.</u>	Monday	<u>Ward 2.</u>	Tuesday
	Thursday		Friday
	Sunday (1 in 3)		Sunday (1 in 3)

APPENDIX G (Contd.)

Thus a fair number of visitors from/to these wards on these days can be expected to say they have been "admitting" a patient.

(b) "Ward round" days

<u>Ward 1.</u>	Tuesday	<u>Ward 2.</u>	Wednesday
	Friday		Saturday

Whilst discharges can be expected on any day many take place on ward round days. Thus a fair number of visitors on these days can be expected to say they have been "collecting" a patient.

(c) Domestic staff sign on and off each day in the enquiry office, at the following times which affect supervision.

<u>On</u>	<u>Off</u>
5 p.m.	11 a.m.
8-8.45 p.m.	1 p.m.
	4 p.m. - 4.30 p.m.

(d) Domestic Staff are paid at the enquiry office on Friday mornings 11.45 a.m. - 12 noon.

(e) Tuesday lunchtime 12.45 - 1.5 p.m. is a "corridor lunch" when hospital staff will congregate in large numbers in the main corridor.

(f) The hospital chaplain visits Wards 1 and 2 every Thursday afternoon.

2. Visitors' Routines:

Many visitors come for several hours at a time. They may leave the ward during this time for many reasons:- e.g.

- (a) To go to the car to collect something.
- (b) To go to the toilet.
- (c) To go to the waiting room to allow another relative to go to the bedside.
- (d) To go for "a breath of air and a smoke".
- (e) To go to the canteen. etc. etc.

In all of these cases they are still on the hospital premises and, they do not need to fill in a slip as they leave the ward but they must be approached to find out what they are going to do. If however, they are leaving the hospital and are going to be away for 20 minutes or more they are to be asked to complete a slip.

Thank you for your assistance,

F. FORSTER.

APPENDIX H

Letter issued to hospital staff prior to commencement of pilot and main studies.

To Doctor

Nurse

Mr./Mrs./Miss

Survey of Visiting: Royal Hospital for Sick Children: Edinburgh.

The present circular is to give a brief outline of a survey of visiting which I am carrying out at the Royal Hospital for Sick Children between October 1967 and March 1968. The main reason for carrying out such a survey is to provide information about this aspect of hospital activity which could be of value in hospital planning.

The survey will be carried out in Wards 1 and 2. Collection of data will fall into two parts:

- Part 1. Visitors will be asked to fill in a small slip each time they visit. These slips will provide a record of visiting frequency.
- Part 2. Parents of each child will be asked to complete a short questionnaire after the discharge of the patient. The questionnaire will be used to collect facts about the social background of the family and about travel times and costs involved in visiting the hospital.

The hospital staff will not be asked to undertake any special duties in connection with the survey except for certain administrative routines which the nursing staff have kindly agreed to handle. The study will be supervised from a point on the ground floor corridor by voluntary helpers working a rota system.

I hope that the hospital staff will not be troubled with questions from visitors in connection with the survey but in case you are approached with queries would you please refer them to the staff nurse or sister on duty at the time? I am anxious to keep intrusion of the survey into normal hospital routines to a minimum. If any problems arise in the wards as the survey develops, which are relevant to your work I should be grateful if they could be brought to my notice so that they can be resolved as quickly as possible.

Thanking you in advance for your generous cooperation.

Yours sincerely,

F. Forster.

APPENDIX H₁

Letter issued to members of staff of Ward 5 prior to the survey being extended to that Ward.

To Dr.

Nurse

There is little factual information available about family visiting to children in hospital. The visiting survey currently being carried out in Wards 1 and 2 is aimed at collecting facts about this aspect of hospital life as such information could be of value in hospital planning.

During the first four weeks of the study in Wards 1 and 2 the number of patients who came from outside the city of Edinburgh was slightly less than anticipated. As one of the main points of the study is to examine the relationship between distance of residence of the patient and the amount the family use the wards, it is necessary to increase the number of patients in the study who are coming from areas outside the city.

For this reason, the study is being extended to Ward 5 from Monday November 13th. The attached notes explain the principal points about the administration of the study and copies of the various forms and the questionnaire being used in the survey are available for your reference in sister's office.

Yours sincerely,

F. FORSTER.

APPENDIX I

VISITING SURVEY - NOTES FOR NURSING STAFF.

I should be grateful if the nursing staff could help me with the following points in the survey:

ADMISSIONS:

1. If patient is to stay overnight:- (a) please give an explanatory letter (with visiting slip attached) to parent/guardian and mention briefly that the survey is being carried out.
(b) tell parent/guardian that they will be asked to fill in slips from 'tomorrow' (i.e. day after admission) and that they should say to the supervisor in the corridor when they leave today that they have been "admitting their child".
2. If patient is a "day admission": (a) please do not give an explanatory letter but point out that the survey is being done and that they should say to the supervisor in the corridor when they leave today that their child is a "day admission".

DAILY PROCEDURES:

1. If a patient is moved from one bed to another please move his/her visiting slips as they are code numbered for each patient.
2. Night Staff: Could you please (a) check the corridor box at midnight remove any visiting slips and return them to Ward 2 (shelf marked "Survey, Mr. Forster")?
(b) fill out a visiting slip for any visitors who may come after 8.30 p.m. and before 8 a.m. next day? (This is the period when the box is unsupervised and your record will be a check on this unsupervised time).

DISCHARGES:

1. Please return any remaining visiting slips for that patient to the intray in sister's office.
2. Give out a questionnaire to parent or guardian. (An alphabetical file in sister's office will be updated daily to include questionnaires/s.a.e's for all patients who come into the questionnaire distribution category).

APPENDIX I (Contd.)

3. If a patient 'qualifies' for a questionnaire and is transferred to convalescent facilities or another ward, please send a questionnaire with him/her to the sister concerned.
4. If a questionnaire is issued please place a tick by the patient's name in the ward daybook.

My sincere thanks for your help.

F. FORSTER.

APPENDIX I₁

Visiting Survey - Notes for Nursing Staff - Ward 5.

I should be grateful if the nursing staff could help me with the following points in the survey which refer only to those patients who come to Ward 5 from outside the city of Edinburgh on and after Monday 13th November.

ADMISSIONS:

If patient is to stay overnight:- (a) please give an explanatory letter (with visiting slip attached) to parent/guardian and mention briefly that the survey is being carried out.

(b) tell parent/guardian that they will be asked to fill in slips from 'tomorrow' (i.e. day after admission and that the box for them to put the slips in is by the door at the entrance to the ward.

DAILY PROCEDURES:

1. If a patient is moved from one bed to another please move his/her visiting slips as they are code numbered for each patient.
2. Night Staff: Could you please check the box at midnight, remove any visiting slips and return them to the intray in sister's office?

DISCHARGES:

1. Please return any remaining visiting slips for that patient to the intray in sister's office.
2. Give out a questionnaire to parent or guardian. (An alphabetical file in sister's office will be updated daily to include questionnaires/s.a.e's for all patients who come into the questionnaire distribution category).
3. If a patient 'qualifies' for a questionnaire and is transferred to convalescent facilities or another ward, please send a questionnaire with him/her to the sister concerned.
4. If a questionnaire is issued please place a tick by the patient's name in the ward daybook.

APPENDIX J

Introductory letter to visitors other than parents
of the patient.

From:

Mr. F. Forster
Assistant Lecturer
Department of Social Medicine,
University of Edinburgh.

Dear Visitor,

This letter is to ask you for your help. With the co-operation of the hospital authorities I am carrying out a survey to show when and how often visitors come to the ward. Such information will be of value in hospital planning.

From Monday October 16th, 1967, all visitors to Wards 1 and 2 are being asked to fill in a small slip at each visit to record time of arrival in and time of departure from the ward.

When a child has been discharged or has been in hospital for fourteen days, (whichever occurs first), the parents of the child will also be asked to fill in a short questionnaire dealing with how they get to the hospital.

The ward sister will be pleased to answer any questions you may have about the survey, when you are in the hospital. The information in the survey is for statistical analysis only and all patients and visitors will remain anonymous.

Yours sincerely,

F. FORSTER.

APPENDIX K

Introductory letter to parents issued at time of admission
of the patient.

From: Mr. F. Forster
Assistant Lecturer
Department of Social Medicine,
University of Edinburgh.

Dear Parent,

This letter is to ask you for your help. With the co-operation of the hospital authorities I am carrying out a survey to show when and how often visitors come to the wards. Such information will be of value in hospital planning.

From Monday October 16th 1967, all visitors to wards 1 and 2 are being asked to fill in a small slip at each visit to record time of arrival in and time of departure from the ward.

When your child has been discharged or, has been in hospital for fourteen days (whichever occurs first), you will also be asked to fill in a short questionnaire dealing with how you get to hospital.

The ward sister will be pleased to answer any questions you may have about the survey, when you are in the hospital. The information in the survey is for statistical analysis only and all patients and visitors will remain anonymous.

Yours sincerely,

F. FORSTER.

APPENDIX L

COPY OF THE REMINDER LETTER SENT IF A QUESTIONNAIRE
WAS NOT RETURNED AFTER TWO WEEKS

Dear

You may remember being given a questionnaire at the end of your child's recent stay at the Royal Hospital for Sick Children in Edinburgh. As the questionnaire forms an important part of the survey of visiting being carried out at the hospital, I should be very grateful if you could return it to me at your earliest convenience.

If you think the questionnaire has been lost in the post or mislaid, please let me know so that I can send you another one.

Yours sincerely,

F. FORSTER
Assistant Lecturer.

APPENDIX M

Specimen page of a ward register

[illegible]

APPENDIX N

Copy of Patient Daily Summary Card

<u>Patient Daily Summary Card</u>	
Name.....	P.S. No.
Admitted <input style="width: 30px; height: 15px;" type="checkbox"/>	Date
Discharged <input style="width: 30px; height: 15px;" type="checkbox"/>	
<u>Visiting Summary</u>	
Visit from:	Mother <input style="width: 30px; height: 20px;" type="checkbox"/>
	Father <input style="width: 30px; height: 20px;" type="checkbox"/>
	Brother <input style="width: 30px; height: 20px;" type="checkbox"/>
	Sister <input style="width: 30px; height: 20px;" type="checkbox"/>
	Other relative <input style="width: 30px; height: 20px;" type="checkbox"/>
	Unrelated friend <input style="width: 30px; height: 20px;" type="checkbox"/>
	No visits <input style="width: 30px; height: 20px;" type="checkbox"/>
<u>Time Available in Hospital</u>	
	<u>Hrs</u> <u>Mins.</u>
Mother	
Father	
Brother	
Sister	
Other relative	
Unrelated friend	
One visitor at least	
Recorded by: _____	
Checked by: _____	
<u>NOTES</u>	

APPENDIX 0

R.H.S.C. - VISITING SURVEY

Morning and evening administrative procedures carried out by the author.

- By 10.30 a.m.
1. Have checked patients and recording slips match.
 2. Have checked biros present, and that enough cards are present in each holder.
 3. Have collected from survey shelf any overnight slips.
 4. Have checked with nurses about early morning visits.
 5. Have transferred all data about previous day's visiting to patient daily summary cards.
 6. Have returned daily summary cards, and visiting record to Usher Institute for checking.
- By 8.30 p.m.
1. Have made out patient daily summary cards for current day.
 2. Have dated all summary cards and visiting slips used that day.
 3. Have brought the daily registers up to date with questionnaires, admissions and discharges.
 4. Have made up questionnaires for all patients who have come into the distribution category.
 5. Have made up parcels of 6 slips for each patient remaining in the ward for next day.

APPENDIX P

Copy of a Patient Master Card Sheet 1

<u>Patient Master Card</u>		P.S. No. ...
Name:	Date of Admission:	
Address:	Date of Discharge:	
D. of Birth:	Length of Stay:	
Area Code No.:	Diagnosis:	
Zone No.:	Diagnostic Code No.:	
<u>SUMMARY OF VISITING</u>		
Number of days and evenings on which a visit made by:	No. of days	No. of evenings
Mother		
Father		
Mother & Father		
Mother or Father		
Mother only		
Father only		
Other Relative		
Brother		
Sister		
Unrelated friend		
Anyone		
Amount of time available in hospital	Hours	Minutes
Mother		
Father		
One parent at least		
Brother		
Sister		
Other relative		
Unrelated friend		
One visitor at least		

APPENDIX Q

TABLE 1. Distribution of patients included in the
sample by distance zone.

	Zone 1 0 < 5 miles	Zone 2 5 < 15 miles	Zone 3 15 miles +	Totals*
Number of patients	215	122	164	501
% of sample	42.9	24.4	32.7	100

* There were 502 cases eventually included in the sample but 1 patient could not be allocated to a distance zone. All tables showing distance zone distributions are therefore based on 501 cases.

APPENDIX Q (Contd.)

TABLE 2. Distribution of patients included in the sample
by sex and by distance zone.

Sex	Zone 1 0 < 5 miles		Zone 2 5 < 15 miles		Zone 3 15 miles +		Totals	
	No. of patients %		No. of patients %		No. of patients %		Number	%
Male	124	57.7	66	54.1	101	61.6	291	58
Female	91	42.3	56	45.9	63	38.4	210	42
Totals	215	100	122	100	164	100	501	100

APPENDIX Q (Contd.)

TABLE 3. Distribution of patients included in the sample by admission status and distance zone.

Admission Status	Zone 1	Zone 2	Zone 3	Totals				
	0 < 5 miles	5 < 15 miles	15 miles +	Number	%			
	No. of Admissions	%	No. of Admissions	%				
First Admissions	176	82	103	84.5	139	84.7	419	83.5
Prior Admissions	22	10.2	12	9.8	16	9.8	50	9.9
Re-admissions	16	7.4	6	4.9	9	5.5	31	6.2
Not known	1	0.4	1	0.8	0	0.0	2	0.4
Totals	215	100	122	100	164	100	501	100

APPENDIX Q (Contd.)

TABLE 4. Distribution of patients included in the sample by admission procedure and distance zone.

Admission Procedure	Zone 1 0 < 5 miles		Zone 2 5 < 15 miles		Zone 3 15 miles +		Totals	
	No. of patients	%	No. of patients	%	No. of patients	%	Number	%
Emergency	176	82	103	84.4	121	73.8	400	79.9
Routine (i.e. waiting list)	30	13.9	14	11.5	33	20.1	77	15.3
Other (e.g. transfer from another hospital)	2	0.9	2	1.6	7	4.3	11	2.6
Not known	7	3.2	3	2.5	3	1.8	13	2.2
Totals	215	100	122	100	164	100	501	100

APPENDIX Q (Contd.)

TABLE 5 Distribution of patients included in the sample by age-group

	Age Group					Totals
	0 < 6 months	6 < 12 months	1 < 5 years	5 < 10 years	10 years +	
No. of Patients	124	44	175	121	37	501
% of Sample	24.8	8.8	34.9	24.1	7.4	100

APPENDIX Q (Contd.)

TABLE 6. Mean length of patient stay by distance zone.

	Zone 1 0 < 5 miles	Zone 2 5 < 15 miles	Zone 3 15 miles +	Totals
No. of patients	215	122	164	501
Mean length of stay in days	6.7	6.1	6.7	6.5

APPENDIX Q (Contd.)

TABLE 7. Number and proportion of patients included in the sample by day of admission and zone of residence.

Day of Week.	Zone 1 0 < 5 miles		Zone 2 5 < 15 miles		Zone 3 15 miles +		Totals	
	No. of patients admitted	% of patients from zone 1	No. of patients admitted	% of patients from zone 2	No. of patients admitted	% of patients from zone 3	No. of patients admitted	% of all patients admitted
Sunday	18	8.4	5	4.1	7	4.3	30	6.0
Monday	52	24.1	25	20.5	39	23.8	116	23.1
Tuesday	38	17.7	17	13.9	34	20.7	89	17.7
Wednesday	14	6.5	12	9.8	18	11.0	44	8.8
Thursday	38	17.7	23	18.9	24	14.6	85	16.9
Friday	45	20.9	25	20.5	24	14.6	95	18.9
Saturday	10	4.7	15	12.3	18	11.0	43	8.6
Totals	215	100.0	122	100.0	164	100.0	501	100.0

APPENDIX Q (Contd.)

TABLE 8. Details of questionnaires issued and returned.

Number issued:	438
Number returned:	394
% Returned	90.0%

Zonal distribution of non-returned questionnaires
as a percentage of total questionnaires issued.

Zone 1		Zone 2		Zone 3		Total	
No.	%	No.	%	No.	%	No.	%
22	5.0	12	2.7	10	2.3	44	10

APPENDIX Q (Contd.)

TABLE 2. Family status* by zone of residence.

Family Status	Zone 1 0 < 5 miles	Zone 2 5 < 15 miles	Zone 3 15 miles +	Totals	
				No. of families	% of sample
Normal	196	117	157	470	93.6
Abnormal	9	3	6	18	3.6
Childrens Home	9	1	1	11	2.4
Not known	1	1	0	2	0.4
Totals	215	122	164	501	100

* For definition of terms see page 132.

APPENDIX Q (Contd.)

TABLE 10. Patients' family type by zone of residence.

Family type	Zone 1 0 < 5 miles	Zone 2 5 < 15 miles	Zone 3 15 miles +	Totals	% of sample
Patient the only child	41	18	34	93	18.5
Other children < 5 yrs (in family)	115	57	82	254	51.5
5 < 12 yrs (in family)	95	58	66	219	43.5
> 12 yrs (in family)	40	25	23	88	17.5
Totals	301	161	210	673	

Based on 501 families.

APPENDIX Q (Contd.)

TABLE 11. Social class* of patients' families by distance zone.

Social Class	Zone 1 0 < 5 miles	Zone 2 5 < 15 miles	Zone 3 15 miles +
I	12)	9)	5)
II	21)	11)	27)
III N.M.	14)	10)	11)
III M	86)	47)	51)
IV	35)	23)	41)
V	25)	13)	19)
Unemployed	20	5	6
Others (e.g. students, forces)	7	4	2
Not known	15	5	6
			<u>26</u>
			530

*Table based on 501 cases. 4 cases were allocated to social class on the basis of mother's occupations where no father was present in the family. In 29 cases where fathers were unemployed coding to social class was on the basis of the father's last occupation.

APPENDIX Q (Contd.)

TABLE 11a. Social class of patient's families by distance zones
(Grouped-percentages based on 501 cases)

Social Class	Zone 1 0 < 5 miles	Zone 2 5 < 15 miles	Zone 3 15 miles +	Totals
I, II & III N.M.	9.4%	6.0%	8.6%	24%
III/IV & V	29.0%	16.6%	22.2%	67.8%
Others/not known	4.4%	1.8%	1.6%	7.8%
Unemployed	-	-	-	0.4%
Totals	42.8%	24.4%	32.4%	100 99.6%

* 29 of the 31 cases of unemployed fathers were coded to a social class on the basis of former occupation. The remaining 2 cases (0.4% of the total sample) could not be allocated to distance zone from the analysis that was undertaken.

APPENDIX Q (Contd.)

TABLE 12. Place of work of father by distance zone.

Place of Work	Zone 1 0 < 5 miles		Zone 2 5 < 15 miles		Zone 3 15 miles +		Totals
	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%	
In Edinburgh	125	58.1	32	26.2	9	5.5	166 33.1
Outside Edinburgh	24	11.2	62	50.8	121	73.8	207 41.3
Not known	44	20.5	23	18.9	25	15.2	92 18.4
Not applicable	22	10.2	5	4.1	9	5.5	36 7.2
Totals	215	100	122	100	164	100	501 100

APPENDIX Q (Contd.)

TABLE 13. Work status of mother by distance zone.

Work Status	Zone 1 0 < 5 miles		Zone 2 5 < 15 miles		Zone 3 15 miles +		Totals	
	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%		%
Full time) Paid	8	3.7	8	6.6	6	3.6	22	4.4
Part time) em-	24	11.2	2	1.6	10	6.1	36	7.2
Not in) ployment	137	64.6	88	72.1	122	74.4	349	69.6
Not known or not applicable	44	20.5	24	19.7	26	15.9	94	18.8
Totals	215	100	122	100	164	100	501	100

APPENDIX R

TABLE 1. Number of available visiting opportunities used by principal visitors by distance zone.

Distance zones	Number of available visiting days	Mother Used	%	Father Used	%	Both parents Used	%	Either parent Used	%	Anyone Used	%
<u>Weekdays</u>											
1	874	606	69.3	438	50.1	371	42.4	674	77.1	691	79.1
2	463	304	65.7	180	38.9	153	33.0	331	71.5	342	73.9
3	725	252	34.8	173	23.9	135	18.6	290	40.0	315	43.4
<u>Weekend days</u>											
1	371	264	71.2	213	57.4	191	51.5	286	77.1	296	79.8
2	205	161	78.5	124	60.5	115	56.1	170	82.9	178	86.8
3	286	167	58.4	144	50.3	123	43.0	188	65.7	192	67.1
<u>All days</u>											
1	1245	870	69.9	651	52.3	562	45.1	960	77.1	987	79.3
2	668	465	69.6	304	45.5	268	40.1	501	75.0	520	77.8
3	1011	419	41.4	317	31.4	258	25.5	478	47.3	507	50.1

APPENDIX R (Contd.)

TABLE 2. Number of visiting opportunities used by principal visitors by grouped social class and distance zone.

Distance zone	Social Class	Available days	Mother Used	%	Father Used	%	Both parents Used	%	Either parent Used	%	Anyone Used	%
<u>Weekdays</u>												
1	Middle Working	207	183	88.4	147	71.0	139	67.1	191	92.3	191	92.3
		621	383	61.7	271	43.6	213	34.3	442	71.2	459	73.9
2	Middle Working	96	82	85.4	50	52.1	46	47.9	86	89.6	86	89.6
		355	214	60.3	127	35.8	105	29.6	236	66.5	244	68.7
3	Middle Working	162	90	55.6	81	50.0	69	42.6	102	63.0	111	68.5
		529	156	29.5	85	16.1	60	11.3	181	34.2	196	37.1
<u>Weekend days</u>												
1	Middle Working	86	78	90.7	68	79.1	67	77.9	79	91.9	79	91.9
		267	169	63.3	136	50.9	115	43.1	190	71.2	200	74.9
2	Middle Working	42	41	97.6	38	90.5	37	88.1	42	100	42	100
		157	114	72.6	82	52.2	74	47.1	122	77.7	130	82.8
3	Middle Working	63	46	73.0	44	69.8	40	63.5	50	79.4	50	79.4
		210	117	55.7	96	45.7	80	38.1	133	63.3	137	65.2
<u>All days</u>												
1	Middle Working	293	261	89.1	215	73.4	206	70.3	270	92.2	270	92.2
		888	552	62.2	407	45.8	328	36.9	632	71.2	659	74.2
2	Middle Working	138	123	89.1	88	63.8	83	60.1	128	92.8	128	92.8
		512	328	64.1	209	40.8	179	35	358	69.9	374	73.0
3	Middle Working	225	136	60.4	125	55.6	109	48.4	152	67.6	161	71.6
		739	273	36.9	181	24.5	140	18.9	314	42.5	333	45.1

Within each zone, for each category of visitor there is a significant difference in amount of visiting between the social classes ($P < .05$ in all cases)

APPENDIX R (Contd.)

TABLE 3. The use of visiting opportunities by principal visitors from each distance zone to visit patients under 5 years of age (15 days < 5) and over 5 years of age.

Distance zone	Patient age-group	Available days	Mother Used	Mother %	Father Used	Father %	Both parents Used	Both parents %	Either parent Used	Either parent %	Anyone Used	Anyone %
<u>All days</u>												
1	< 5	775	496	64.0	340	43.9	297	38.3	540	69.7	550	71.0
	≥ 5	422	351	83.2	290	68.7	252	59.7	389	92.2	405	96.0
2	< 5	372	247	66.4	162	43.5	149	40.1	260	69.9	267	71.8
	≥ 5	264	201	76.1	134	50.8	113	42.8	222	84.1	234	88.6
3	< 5	703	264	37.6	183	26.0	153	21.8	294	41.8	308	43.8
	≥ 5	229	128	55.9	99	43.2	79	34.5	148	64.6	164	71.6
<u>Weekdays</u>												
1	< 5	548	352	64.2	226	41.2	196	35.8	383	69.8	388	70.8
	≥ 5	292	239	81.8	195	66.8	166	56.8	268	91.8	280	95.9
2	< 5	257	159	61.9	94	36.6	84	32.7	169	65.8	173	67.3
	≥ 5	183	134	73.2	82	44.8	67	36.6	149	81.4	156	85.2
3	< 5	500	154	30.8	93	18.6	75	15.0	172	34.4	184	36.8
	≥ 5	170	81	47.6	58	34.1	44	25.9	95	55.9	108	63.5
<u>Weekend days</u>												
1	< 5	227	144	63.4	114	50.2	101	44.5	157	69.2	162	71.4
	≥ 5	130	112	86.2	95	73.0	86	66.1	121	93.0	125	96.0
2	< 5	115	88	76.5	68	59.2	65	56.5	91	79.1	94	81.0
	≥ 5	81	67	82.7	52	64.2	46	56.8	73	90.0	78	96.4
3	< 5	203	110	54.2	90	43.7	78	37.9	122	59.2	124	60.2
	≥ 5	59	47	79.7	41	69.5	35	59.3	53	89.9	56	95.0

APPENDIX R (Contd.)

TABLE 4. Percentage of patients from each distance zone receiving low, medium and high levels of visiting from principal visitors.
(Patients with lengths of stay < 3 days excluded.
N = 294: Normal families: 1st Admission)

Percentage of patients receiving different levels of visiting by Mothers

Distance zones	Low		Medium		High		Totals
	Number	%	Number	%	Number	%	
1	23	19.2	17	14.2	80	66.7	120
2	12	16.7	18	25.3	42	58.3	72
3	46	45.1	23	22.5	33	32.4	102
Totals	81	27.6	58	19.7	155	52.7	294

Percentage of patients receiving different levels of visiting by Fathers

Distance zones	Low		Medium		High		Totals
	Number	%	Number	%	Number	%	
1	40	33.3	29	24.2	51	42.5	120
2	32	44.4	15	20.8	25	34.7	72
3	62	60.8	18	17.6	22	21.6	102
Totals	134	45.6	62	21.1	98	33.3	294

Percentage of patients receiving different levels of visiting by both parents

Distance zones	Low		Medium		High		Totals
	Number	%	Number	%	Number	%	
1	55	45.8	17	14.2	48	40.0	120
2	36	50.0	13	18.1	23	31.9	72
3	73	71.6	12	11.8	17	16.7	102
Totals	164	55.8	42	14.3	88	29.9	294

[Contd.]

APPENDIX R (Contd.)

TABLE 4 (Contd.)

Percentage of patients receiving different levels of visiting
by either parent

Distance zones	Low		Medium		High		Totals %
	Number	%	Number	%	Number	%	
1	16	13.3	11	9.2	93	77.5	120
2	10	13.9	15	20.8	47	65.3	72
3	39	38.2	23	22.5	40	39.2	102
Totals	65	22.1	49	16.7	180	61.2	294

Percentage of patients receiving different levels of visiting
by anyone

Distance zones	Low		Medium		High		Totals %
	Number	%	Number	%	Number	%	
1	15	12.5	11	9.2	94	78.3	120
2	11	15.3	15	20.8	46	63.9	72
3	38	37.3	20	19.6	44	43.1	102
Totals	64	21.8	46	15.6	184	62.6	294

APPENDIX R (Contd.)

TABLE 5. Percentage of visitors receiving low, medium and high levels of visiting from principal visitors - by distance zone and social class.

Levels of Area visiting		Mother				Father				Either parent				Both parents				Anyone			
		M.C.		W.C.		M.C.		W.C.		M.C.		W.C.		M.C.		W.C.		M.C.		W.C.	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	Low	2	7.1	25	25.3	5	17.9	38	38.4	1	3.6	19	19.2	7	25.0	53	53.5	1	3.6	17	17.2
	Medium	2	7.1	18	18.2	3	10.7	28	28.3	2	7.1	9	9.1	1	3.6	16	16.2	2	7.1	10	10.1
	High	24	85.7	56	56.6	20	71.4	33	33.3	25	89.3	71	71.7	20	71.4	30	30.3	25	89.3	72	72.7
2	Low	1	6.3	12	19.0	5	31.3	33	52.4	1	6.3	10	15.9	5	31.3	37	58.7	1	6.3	11	17.5
	Medium	1	6.3	19	30.2	3	18.8	11	17.5	1	6.3	17	27.0	4	25.0	8	12.7	1	6.3	16	25.4
	High	14	87.5	32	50.8	8	50.0	19	30.2	14	87.5	36	57.1	7	43.8	18	28.6	14	87.5	36	57.1
3	Low	7	25.9	42	52.5	7	25.9	58	72.5	5	18.5	36	45.0	10	37.0	67	83.8	5	18.5	35	43.8
	Medium	5	18.5	19	23.8	7	25.9	12	15.0	4	14.8	20	25.0	7	25.9	5	6.3	3	11.1	18	22.5
	High	15	55.6	19	23.8	13	48.1	10	12.5	18	66.7	24	30.0	10	37.0	8	10	19	70.4	27	33.8

M.C. = Middle class I/II/III N.M.

W.C. = Working class IIIM/IV/V.

APPENDIX R (Contd.)

TABLE 6. Percentage of patients from each distance zone receiving low, medium and high levels of evening visiting from principal visitors by distance zone. (Patients with lengths of stay < 3 days excluded. N = 241 Normal families: 1st admissions)

Percentage of patients receiving different levels of visiting by Mothers

Distance zones	Low		Medium		High		Totals %
	Number	%	Number	%	Number	%	
1	80	68.4	14	12.0	23	19.7	117
2	37	68.5	6	11.1	11	20.4	54
3	54	77.1	11	15.7	5	7.1	70
Totals	171	71	31	12.9	39	16.2	241

Percentage of patients receiving different levels of visiting by Fathers

Distance zones	Low		Medium		High		Totals %
	Number	%	Number	%	Number	%	
1	77	65.8	15	12.8	25	21.4	117
2	36	65.5	9	16.4	10	18.2	55
3	56	80.0	8	11.4	6	8.6	70
Totals	169	69.8	32	13.2	41	16.9	242

[Contd.]

* Owing to undetected error some of the totals are discrepant by one.

APPENDIX R (Contd.)

TABLE 6 (contd.)

Percentage of patients receiving different levels of visiting
by both parents

Distance zones	Low		Medium		High		Totals %
	Number	%	Number	%	Number	%	
1	92	78.6	8	6.8	17	14.5	117
2	42	76.4	4	7.3	9	16.4	55
3	61	87.1	5	7.1	4	5.7	70
Totals	195	80.6	17	7.0	30	12.4	242

Percentage of patients receiving different levels of visiting
by either parent

Distance zones	Low		Medium		High		Totals %
	Number	%	Number	%	Number	%	
1	65	55.6	16	13.7	36	30.8	117
2	33	70.4	8	14.8	13	24.1	54
3	51	72.8	9	12.9	10	14.3	70
Totals	149	61.8	33	13.7	59	24.5	241

Percentage of patients receiving different levels of visiting
by anyone

Distance zones	Low		Medium		High		Totals %
	Number	%	Number	%	Number	%	
1	63	53.9	16	13.7	38	32.2	117
2	32	59.3	8	14.8	14	25.9	54
3	50	71.5	10	14.3	10	14.3	70
Totals	145	60.2	34	14.1	62	25.6	241

APPENDIX R (Contd.)

TABLE 7. Visiting by Mothers by time period to patients of different lengths of stay - by distance zone.

Zone	Length of stay in days	Time Period									
		Days 1 - 3		Days 4 - 7		Days 8 - 14		Days 15 - 21			
		Exposed	Used	%	Exposed	Used	%	Exposed	Used	%	%
1	≤ 3	151	133	88.1	-	-	-	-	-	-	-
	4 ≤ 7	129	97	75.2	84	56	66.7	-	-	-	31.8
	8 ≤ 14	126	96	76.2	168	118	70.2	169	95	56.2	-
	15 ≤ 21	66	48	72.7	88	63	71.6	154	97	63.0	72 61.0
2	≤ 3	84	67	79.8	-	-	-	-	-	-	-
	4 ≤ 7	111	85	76.6	88	53	60.2	-	-	-	-
	8 ≤ 14	69	52	75.4	92	63	68.5	76	50	65.8	-
	15 ≤ 21	24	15	62.5	32	22	68.8	56	36	64.3	22 59.5
3	≤ 3	103	53	51.5	-	-	-	-	-	-	-
	4 ≤ 7	111	72	64.9	69	37	53.6	-	-	-	-
	8 ≤ 14	111	43	38.7	148	58	39.2	101	34	33.7	-
	15 ≤ 21	60	19	31.7	80	26	32.5	140	49	35.0	28 31.5

APPENDIX R (Contd.)

TABLE 7 (Contd.) Visiting by either parent by time period to patients of different lengths of stay - by distance zone.

Zone	Length of stay in days	Time Period									
		Days 1 - 3		Days 4 - 7		Days 8 - 14		Days 15 - 21			
		Exposed	Used	%	Exposed	Used	%	Exposed	Used	%	Used
1	≤ 3	151	137	90.7	-	-	-	-	-	-	-
	4 ≤ 7	129	105	81.4	84	65	77.4	-	-	-	-
	8 ≤ 14	126	100	79.4	168	129	76.8	169	102	60.4	-
	15 ≤ 21	66	54	81.8	88	70	79.5	154	114	74.0	79 66.9
2	≤ 3	84	70	83.3	-	-	-	-	-	-	-
	4 ≤ 7	111	88	79.3	88	53	60.2	-	-	-	-
	8 ≤ 14	69	54	78.3	92	69	75.0	76	53	69.7	-
	15 ≤ 21	24	20	83.3	32	27	84.4	56	42	75.0	25 67.6
3	≤ 3	103	58	56.3	-	-	-	-	-	-	-
	4 ≤ 7	111	79	71.2	69	45	65.2	-	-	-	-
	8 ≤ 14	111	51	45.9	148	70	47.3	101	38	37.6	-
	15 ≤ 21	60	22	36.7	80	30	37.5	140	53	37.9	31 34.8

APPENDIX R (Contd.)

TABLE 8. Proportion of first 3 days of stay used by principal visitors from each distance zone - by grouped social class.

Area	Mother			Either Parent						Anyone				
	Middle class			Working class		Middle class		Working class		Middle class		Working class		
	Avail- able	Used	%	Avail- able	Used	%	Used	%	Used	%	Used	%	Used	%
1	106	98	92.5	341	255	74.7	100	94.3	276	81.0	100	94.3	282	82.6
2	66	61	92.4	212	149	70.3	62	93.9	161	75.9	62	93.9	164	77.4
3	96	64	66.7	273	120	44.0	72	75.0	134	49.1	75	78.1	143	52.4

APPENDIX R (Contd.)

TABLE 2. Proportion of first 3 days of stay used by principal visitors from each distance zone to visit patients under and over 5 years old.

Zone	Mothers < 5			Mothers ≥ 5			Either Parent < 5			≥ 5			Anyone < 5			≥ 5		
	Avail- able	Used	%	Avail- able	Used	%	Used	%	Used	%	Used	%	Used	%	Used	%	Used	%
1	329	251	76.3	143	123	86.0	266	80.7	132	92.2	268	81.5	136	95.1				
2	185	136	73.5	103	83	80.6	143	77.8	89	86.5	145	78.3	91	88.4				
3	289	131	45.4	96	56	58.3	148	51.2	62	64.6	156	54.0	67	69.8				

APPENDIX S

TABLE 1. Transport ownership by grouped social class and area of residence

Number of vehicles	Upper social classes I, II and III N.M.						Lower social classes IIM, IV and V						Totals	
	Area 1		Area 2		Area 3		Area 1		Area 2		Area 3			
	No. of families	%	No. of families	%	No. of families	%	No. of families	%	No. of families	%	No. of families	%		
Not known	1	2.4	1	3.7	0	0	2	1.8	4	6.0	0	0	8	2.1
None	9	21.4	3	11.1	3	8.1	71	63.4	33	49.2	57	63.3	176	46.9
One	31	73.8	21	77.8	30	81.1	39	34.8	30	44.8	33	36.7	184	49.1
Two or more	1	2.4	2	7.4	4	10.8	0	0	0	0	0	0	7	1.9
Totals	42	100	27	100	37	100	112	100	67	100	90	100	375	100

N = 375

APPENDIX S (Contd.)

TABLE 2. Usual method of transport used by mothers when going to visit -
by social class and area.

Method of Transport	Upper social classes						Lower social classes					
	Area 1		Area 2		Area 3		Area 1		Area 2		Area 3	
	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%	No. of Mothers	%
Not known	1	2.4	1	3.7	2	6.1	3	2.9	2	3.3	2	2.9
Public	13	31	7	25.9	2	6.1	72	69.3	42	70.0	49	72.1
Private	23	54.7	19	70.4	29	87.8	17	16.3	13	21.7	16	23.5
Various	0	0	0	0	0	0	2	1.9	3	5.0	1	1.5
Walking	5	11.9	0	0	0	0	10	9.6	0	0	0	0
Totals	42	100	27	100	33	100	104	100	60	100	68	100

N = 334

APPENDIX S (Contd.)

TABLE 3. Usual method of transport used by fathers when going to visit -
by social class and area.

Method of Transport	Upper Social Classes						Lower Social Classes					
	Area 1		Area 2		Area 3		Area 1		Area 2		Area 3	
	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%	No. of Fathers	%
Not known	2	5.4	1	4.3	2	6.7	5	5.6	2	3.8	1	1.8
Public	4	10.8	1	4.3	0	0	42	47.2	21	39.6	35	61.4
Private	28	75.7	21	91.4	28	93.3	34	38.2	30	56.6	21	36.8
Various	1	2.7	0	0	0	0	0	0	0	0	0	0
Walking	2	5.4	0	0	0	0	8	9.0	0	0	0	0
Totals	37	100	23	100	30	100	89	100	53	100	57	100

N = 289

APPENDIX T

Outline of a proposed follow-up study of visiting to
paediatric in-patients at the Royal Hospital for Sick
Children, Edinburgh.

Participating bodies:

Management Committee of the Royal Hospital for Sick Children,
Edinburgh

Berwickshire)	
Roxburghshire)	
Peeblesshire)	-- Directors of Social Work
Selkirkshire)	

Objectives of study

1. To assess whether at admission of a patient (from the study area of Berwickshire, Roxburghshire, Peeblesshire and Selkirkshire) it is possible to ascertain the nature of any practical difficulties that parents anticipate will prevent them from making daily visits.
2. To see if it is administratively possible to provide and to mobilise the appropriate help to meet the identified need from the resources available to the hospital and the local authorities.
3. To assess whether the patient could have been given alternative forms of care to in-patient treatment.

Methods

1. Data will be collected for 100 patients admitted sequentially to the hospital from the study area.
2. At admission or as soon as possible thereafter the medical social work staff at the hospital will interview the parent. These interviews will enquire into two areas which might affect parents' visiting intentions:
 - a) Attitudes to visiting a hospitalised child.
 - b) The nature of any practical difficulties that the parents anticipate will hinder visiting.

Assuming that a practical need could be identified under 2b) and that to meet this need would not conflict with parental feelings

identified under 2a) telephone contact would be made with the relevant local authority social work department with a view to seeking the required help as early as possible. (e.g. Measures of assistance that have been offered from one local authority include the provision of finance or voluntary cars to help with travelling and the provision of home helps or temporary day nursery facilities.)

3. Records of visiting to children included in the sample will be kept. Comparison of these results with visiting to patients in zone 3 in the original survey will be made to ascertain whether the provision of assistance leads to an increase in visiting.
4. Consultant assessment of the patients' needs for specialist in-patient services will be made and whether the patient might have been kept out of hospital had alternative forms of care been available.